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Selling Rifle Shooting

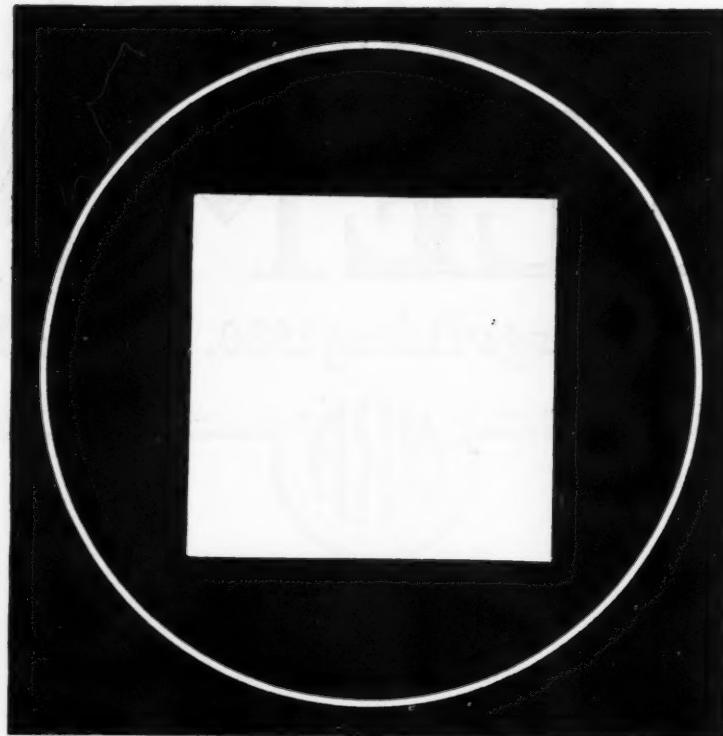
By C. B. Lister

Firearms of Yesterday

By Capt. Jerome Clark

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Average group plotted for comparison at the 10 ring of the International Target

300 Consecutive 10's at 300 Meters IT'S POSSIBLE

In the tests of ammunition for the American International Rifle Teams, which were held at Aberdeen, Maryland, December 17 and 18, a new standard of accuracy was established.

In the shooting of the 300-meter ammunition, which was done at 300 yards, the winning lot made 30 consecutive 10-shot groups, each of which, if centered, would have scored 100 x 100 on the 4 inch 10 ring of the standard International target, at either 300 yards or 300 meters. The smallest group of the thirty measured 1.08 x 1.95 inches; the largest, 2.60 x 3.45 inches (center to center); the average, 2.17 x 2.17 inches; the almost incredible accuracy of seven-tenths of one minute of angle. Even the widest shots in such average groups will cut over half their diameter into a dime at 100 yards.

This result was accomplished with 180 grain flat-base bullets driven at 2610 foot seconds muzzle velocity, by 46.3 grains of Hercules HiVel powder, which devel-

oped a pressure of only 46,200 pounds per square inch.

Of the six samples entered in the 300-yard test, the three HiVel loads finished first, third, and fourth.

In the Palma Test, at 1,000 yards, the manufacturers loaded six lots, all with HiVel. The winning lot averaged 5.48 inches as a mean radius for 40 targets. Two new record 1,000-yard targets were made during the shooting. The first of these measured 7.36 x 7.29 inches and had a mean radius of 2.99 inches. The second, 8.92 x 5.50 inches, with a mean radius of 2.90 inches.

No matter whether HiVel is loaded with flat-base or boat-tailed bullets; whether these be jacketed with cupro-nickel, gilding metal, or lubaloy; whether the powder be weighed or measured; whether the ammunition be loaded by a commercial company or a government arsenal; the National Match and International tryouts have again shown that the result is the same.

The HiVel Ammunition Wins

HERCULES POWDER CO.

Wilmington, Delaware



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The AMERICAN RIFLEMAN

The Publication of the National Rifle Association of America

VOL. LXXI, No. 15

WASHINGTON, D. C. JANUARY 1, 1924

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The Perfect .22 Single Shot Pistol

By Henry Walter Fry

First Paper

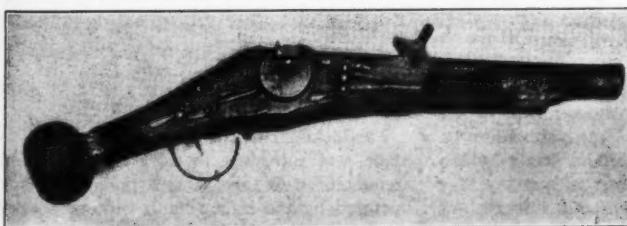
A CONSIDERATION OF SUNDRY OTHER PAST AND PRESENT MODELS

WHILE target shooting with the rifle, as shown by fifteenth century pictures, is almost as old as the invention of gunpowder itself, yet target practice with the pistol does not date back much more than a hundred and thirty years or so. Up to that time the pistol was not looked upon as an arm of precision. It was often most elaborately made, with the richest ornamentation in the form of chiselling, carving and inlay with gold, silver or ivory, but so little regard was paid to its shooting capabilities that it was very often made without any sights or aiming appliances at all, showing that it was looked on as a weapon meant to be used at a distance of not more than a very few yards, at which hitting one's adversary was a comparatively easy matter.

The first pistols to come into anything like general use were wheellocks, in which the pulling of the trigger set revolving a

pocket, the precursors of our latter day deringers. But for the space of a hundred and fifty years no particular care seems to have been paid to the accuracy possibilities of the single hand arm, many flintlock pistols being made, either without sights or with the hammer on top of the barrel so that taking aim with the pistol was impossible.

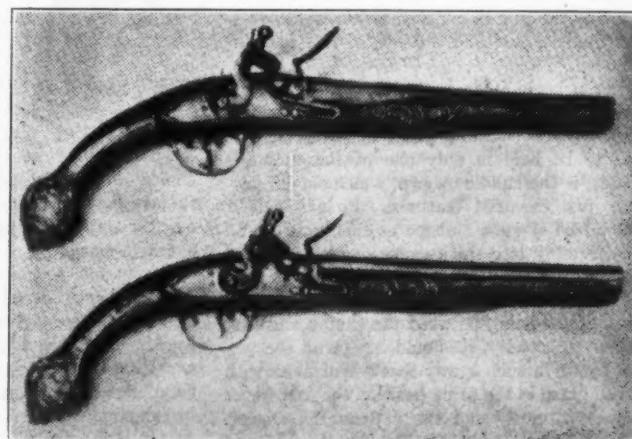
It was not until the last years of the eighteenth century, when the change came in the fashion of men's dress, which discarded the swords as a part of a gentleman's apparel, that duels with the pistol became the usual method of settling points of honor. As a consequence men began to demand and gunmakers to furnish, pistols, perfectly plain in appearance, but with locks finished and barrels bored with the greatest accuracy that the mechanical re-



Above: Most Wheellocks were Enormous, Clumsy Affairs, Made to be Carried in Saddle Holsters, and so Costly as to be Quite Beyond the Reach of Any but the Very Richest People. Right: Typical Eighteenth Century Pistols. Notice that they are not Furnished with Sights.

toothed steel wheel against a piece of iron pyrites held by a clamp over the powder in the priming pan. This wheel was worked by a spring, which was wound up by a key when the pistol was loaded. Most wheellocks were enormous, clumsy affairs, often very richly ornamented, made to be carried in saddle holsters and fired from horseback, and so costly as to be quite beyond the reach of any but the very richest people.

Then about 1630 came the invention of the flintlock, which immensely cheapened the cost of the making of pistols and brought them practically within the reach of everybody. So they were made in all sizes, from the big bore long barreled horse pistol to tiny little weapons which could be carried in the vest



sources of the time would allow. The result was that a pair of fine English duelling pistols were masterpieces of the gunsmith's art and today are highly prized by collectors. They were almost always smooth bore, of about 1-2 or 9-16 inch calibre, with heavy octagon barrels 9 or 10 inches long, locks fitted with hair triggers and very often saw shaped handles. Just what the accuracy possibilities of a finely made smooth bored duelling pistol are at twenty yards I cannot say, never having had the opportunity of trying one in a machine rest, but I should think that a three or four inch circle would be as much as they would do, for a string

of ten shots. The invention of the percussion cap improved the pistol's certainty of fire, and its accuracy was much increased by the rifling of the barrel, in fact it is doubtful whether up to a certain range the most modern arms are superior to a finely made muzzle-loading rifled duelling pistol. But rifled pistols never found general favor for duelling purposes and to this day are not allowed in European duels, the smooth bore pistols being thought quite deadly enough.

The first cartridge pistols to be used for target work were what were called "saloon pistols," of about .22 caliber, smooth bore, shooting a rim-fire bulleted breech cap, loaded with a tiny charge of powder and a round bullet, but they were not accurate beyond a very few yards, and it was not until the invention of the .22 long-rifle cartridge and its application to the long barreled, accurately bored and rifled single shot pistol that the enthusiast of the single hand arm was furnished with a weapon, inexpensive to use and yet possessing shooting powers at distances hitherto undreamt of as being within the pistol's capabilities.

Having had quite a lot of practical experience in the shooting of the various models of single shot pistols, and having become acquainted with the merits and defects of pretty well all of them, I propose to set down a specification of what I consider to be the essential features of the Perfect .22 Single Shot Pistol, selecting the .22 caliber as being that of more than ninety per cent of the single shot

being of the break-open kind, the locking catch next receives our attention. It should be simple, strong enough to stand long continued wear, and if possible worked by the right hand when grasping the handle in the firing position, although very simple and effective catches worked by the left hand are fitted to certain of the models which we shall consider later.

The lock should be of strong and simple design, of the finest materials and workmanship, with a small, light hammer, which is entirely below the line of the sights in all positions, with a very short travel, and a smooth and easy working main spring just strong enough to fire the cartridge with certainty and no more.

The ejector should be of the kicking variety, made to throw the fired shell clear of the chamber when the pistol is opened after firing.

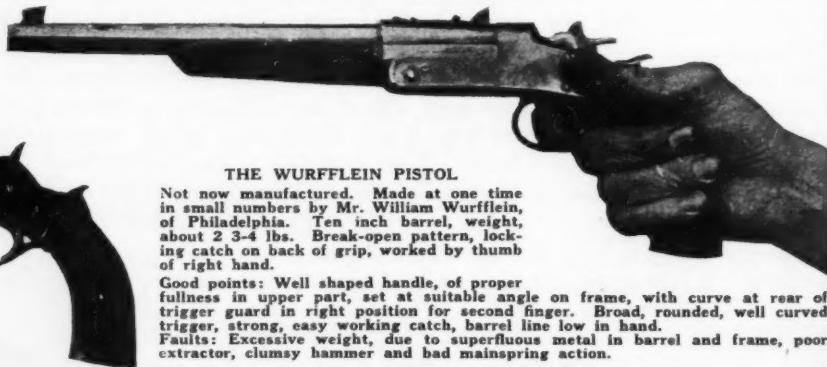
Last, but not least, comes the barrel, of the standard length of ten inches, of just such a size as to bring the total weight of the pistol up to from $1\frac{1}{2}$ to $1\frac{3}{4}$ lbs., certainly not an ounce over 2 lbs., carefully and accurately bored, so that standard .22 bullet, pushed through the barrel from the breech end, gets tighter and tighter in the bore as it approaches the muzzle, and shows on coming out that it has just touched the bottom of the grooves assuring a properly tight fit.

THE WURFFLEIN PISTOL

Having touched upon what I consider to be the essential features of a perfect .22 single shot pistol, we will now take a look at some of the different models and see how far they conform to the standard of perfection that we have specified.

Now the pistol which has the best combination of grip, trigger, locking catch and center of barrel line low down in the hand, is the Wurfflein, a make of which most of the present generation of pistol shooters has never even seen or heard. Yet the Wurfflein pistol was well known in its day, had very favorable notice from the late A. C. Gould in his "Modern American Pistols and Revolvers," in which are reproductions of some very fine fifty shot diagrams made with it on the Standard American Target. The illustration shows an exceedingly fine specimen which I was fortunate enough to acquire some little time ago. It shows it to have a grip of most excellent shape, of abundant fullness in the upper part, and set on the frame in a backward sloping curve which when grasped in the firing position brings the first finger naturally and easily on to the trigger.

The trigger itself is an excellent one, broad and rounded, with a generous inward curve



THE WURFFLEIN PISTOL

Not now manufactured. Made at one time in small numbers by Mr. William Wurfflein, of Philadelphia. Ten inch barrel, weight, about 2 3-4 lbs. Break-open pattern, locking catch on back of grip, worked by thumb of right hand.

Good points: Well shaped handle, of proper fullness in upper part, set at suitable angle on frame, with curve at rear of trigger guard in right position for second finger. Broad, rounded, well curved trigger, strong, easy working catch, barrel line low in hand.

Faults: Excessive weight, due to superfluous metal in barrel and frame, poor extractor, clumsy hammer and bad mainspring action.

pistols used in this country today, and reviewing the merits and otherwise of the various models, past and present, of this particular arm.

Let us begin at the butt or breech end. Now one of the most important parts of any single hand firearm, whether pistol or revolver, that has to be held in only one of the shooter's hands, is the handle or grip, which should possess two essential features. First of all it should be of such a shape as to fit easily and comfortably into the average man's hand, and to do this it should be of ample bulk and fullness in the upper part, where clasped in the fork of the hand, between the thumb and first finger. Secondly, it should be set on the pistol frame in such a way that when taken with a full grasp in the firing position the first finger comes naturally and easily upon the trigger. The trigger itself should be broad and rounded, and curved in such a way that the trigger finger fits easily and comfortably into it.

The frame and lockwork should be made as small and light as possible, so that all the metal needed to bring the pistol to a weight suited to the arm of the average middle aged pistol marksman should be put into the barrel, and so constructed as to bring the center line of the barrel as close down to the hand as possible.

All models of single shot pistols but one

The sights must of course be left to the choice of the individual shooter, but of all things should be amply large enough to be quickly and easily seen without strain by the average man's eye. In actual practice for target work, both indoors and out, most men of any experience seem to prefer what are known as the Patridge sights, having been described by Mr. E. E. Patridge in a letter to *Shooting and Fishing* of January 13, 1898. They are a combination of square cut rear notch and broad, square topped vertical blade, from 1-10 to 1-8 inch wide. My own preference is for the square rear notch and 1-8 inch front bead.

And last of all, though it should by rights have been put first, the Perfect .22 Single Shot Pistol should be designed as such from breech to muzzle, and not be a makeshift, ill-mated combination of a pistol barrel and handle and rifle or revolver action.

Now let us examine some of the well known models of .22 single shot pistols, past and present, and see how far they conform to the specified standard of perfection which we have laid down.

into which the fore finger fits with comfort and ease.

The locking catch is very strong and solidly made, warranted not to work loose with any amount of wear, and is so arranged as to be operated by the right thumb without moving the hand from the firing position.

Illustration No. 2 of the pistol grasped in the shooter's hand, shows how close down to the hand is the center line of the barrel.

But notwithstanding these good features, the .22 Wurfflein has some very serious defects. The lock is of poor design, with a heavy, clumsily made hammer, the thumb spur of which in falling blocks up the line of sight, and is worked by end compression of a flat mainspring, a most vicious mechanical arrangement.

The extracting action is weak, and only draws the fired shell about $\frac{1}{8}$ inch from the chamber, leaving it to be picked out by the shooter's fingers.

The lock frame and barrel contain a whole lot of unnecessary metal, so much so as to

(Concluded on page 19)

WATCHING THE MEAN RADIUS — SHRINK —

BY KENDRICK SCOFIELD

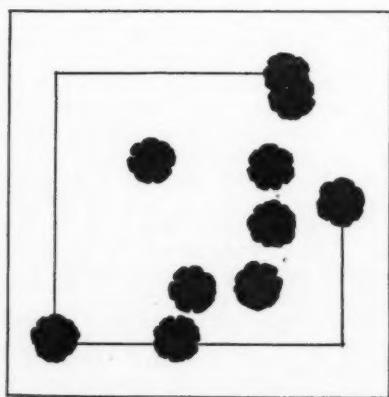


A Corner in the Measuring House

INTERNATIONAL-Olympic ammunition tests held at Aberdeen Proving Grounds December 17 and 18, again upset all previous accuracy standards.

It is true that the new mean radius figure for 1000 yards—5.497 inch—is less than one-fifth of an inch smaller than the record made at the same distance by Frankford's new 9 degree boat tail winning the National Match test on November 7, and that this difference, distributed among forty test groups is imperceptible save when measured by the infinitesimal graduations of an engineer scale and considered in aggregate. Yet the winning entrant at the long range, Remington Arms Company Lot No. 1, none the less has fixed and holds a new record. It will be the ammunition which the American Olympic Team will use at Chalons, France, June 21 to 28.

Turning back to the 1923 records, and comparing them with the 1924 figures for 300 meter International loads tells a similar story. The Remington International which was used last year at Camp Perry scored a figure of merit of 2.8059 inches. This year's winner, which is the old 180 grain Palma, recorded a figure of merit of 2.179 inches, a very material shrinkage of more than six-tenths of an inch.



An Average Good Group with the International Winner. Extreme Horizontal 1.75 inches, Extreme Vertical 1.60 inches, Figure of Merit 2.10 Inches.

For Olympic honors at Aberdeen, six lots of ammunition were offered to be tested at 1000 yards.

Frankford Arsenal whose ammunition had showed up so well during the National Match test offered two entries. "Palma A"—a cartridge containing a bullet designated as type A-1, similar to the 9 degree boat tail but with a slightly sharper ogive, driven by 48 grains of HiVel, at an initial velocity of 27,448 foot seconds under a pressure of 48,785 pounds and depending for ignition upon a fulminate primer; and "Palma B," the same as "Palma A," except that a non-fulminate primer was used.

Remington also submitted two Lots. Lot No. 1 carried a 200 grain flat base cupro nickel bullet driven at 2,480 foot seconds by 44.5 grains of HiVel. Lot No. 2 was the old "180 grain Palma" with a propellant charge of 46.3 grains of HiVel and an initial velocity of 2,608 foot seconds.

Western's two entries completed the field. Lot 52, carried the Western 180 grain Lubaloy boat tail with 46 grains of HiVel at 2,650 foot seconds. Lot 62 was similar except 49 grains of HiVel was used.

For testing at 300 yards to determine the International Match ammunition winner six lots were also entered, but in some cases duplicating the 100 yards lots probably upon the theory that an ammunition which shoots accurately at the long range would be found accurate in the same ratio at the shorter distance.

Frankford Arsenal entered two lots distinct from their long range samples. "International A" carried the straight Type-A 1924 National Match bullet, fulminate primer, and 44.7 grains of DuPont's 1147, giving an initial velocity of 2477. "International B" carried a 180 grain flat base cupro nickel bullet, No. 70 primer and 44.7 grains of 1147 powder, with an initial velocity of 2426.

Remington entered for 300 yards its 1000 yard Palma load, Lot 2 and another designated. Lot 3 which carried the standard 180 grain bullet propelled by 52 grains of DuPont's 1147 at 2612 foot seconds.

Western submitted samples of its Lot 52 and 62 in both competitions.

At the conclusion of the test the competitors were lined up in this order by the averages of forty targets of 10 shots each:

For the Olympic-Palma ammunition, fired at 1000 yards, standard of measurement, mean radius:

1. Remington Arms Company Lot No. 1 (200 grain cupro nickel bullet and HiVel) average mean radius, 5.497 inches;

2. Western Cartridge Company, Lot 52 (180 grain Lubaloy bullet and HiVel) average mean radius, 5.823 inches;

3. Remington Arms Company, Lot No. 2 (180 grain bullet and HiVel) average mean radius, 6.034 inches;

4. Frankford Arsenal "Palma A" (A-1 bullet, fulminate primer and HiVel) average mean radius, 6.319 inches;

5. Frankford Arsenal "Palma B" (A-1 bullet, No. 70 primer and HiVel) average mean radius, 6.627 inches;

6. Western Cartridge Company, Lot 62 (180 grain Lubaloy and HiVel), average mean radius, 6.962 inches.

For the International ammunition, fired at 300 yards, standard of measurement, Figure of Merit (the mean of the extreme vertical and the extreme horizontal dispersion).

1. Remington Arms Company Lot No 2 (180 grain bullet and HiVel, the old Palma load) Figure of Merit 2.179 inches;

2. Remington Arms Company Lot No. 3 (180 grain bullet and 1147 Powder) Figure of Merit 2.214 inches;

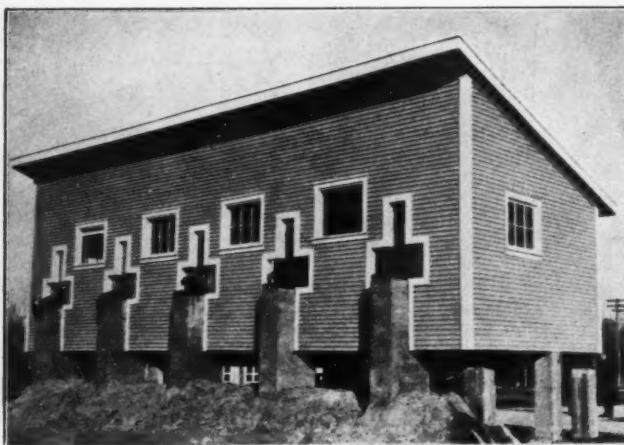
3. Western Cartridge Company Lot 62 (180 grain Lubaloy and HiVel) Figure of Merit 2.98 inches;

4. Western Cartridge Company Lot 62 (180 grain Lubaloy and HiVel) Figure of Merit 2.98 inches;

5. Frankford Arsenal "International B" (Type A bullet non-fulminate primer, 1147 powder) Figure of Merit 3.350 inches;

6. Frankford Arsenal "International A" (Type A bullet, fulminate primer and 1147 powder) Figure of Merit 3.366 inches;

Bearing in mind the really remarkable per-



Left, The New Shooting house at Aberdeen. Constructed to permit testing ammunition in severe weather. Note the concrete piers on which the Mann barrels rest.

Below, A Corner of the Interior of the Shooting House, Spotting Scope in Place and Mann Barrel in Rest.

(Photos by C. S. Landis.)

formance of the government's machine loaded ammunition in the November 7 tests, contrasting it with the behavior of a closely similar type in the December 17 tests and considering the mean radii and figures of merit which governed the selection of the 1924 Olympic and International winners emphasize certain apparent anomalies which largely defy explanation.

The National Match test winner which recorded a mean radius on November 7 of 5.685 inches, when shot in a very slightly different form in the Olympic test a month later showed a mean radius of 6.607 inches which put it in fifth place. Weather conditions had something to do with this although the presence of wind during the Olympic there was practically none during the National Match test does not supply an adequate reason.

Also, Remington Lot No. 2 the old Palma load which won the 300 yard test came in a low third at the long range, a performance which was just the reverse expected of it.

All of which might justify speculation as to whether, in a race between several lots of gilt-edge ammunition, the results of only 40 targets would show the same results as, for instance treble that number fired over a period of several days.

But such speculation is likely to be more interesting than important. After all the reason underlying the ammunition testing system is to encourage the development and manufacture of super-accurate ammunition, and the annual tryouts certainly supply the incentive. Nor is there any doubt that this year's winners will supply the American marksman with a cartridge in every way commensurate with his skill.

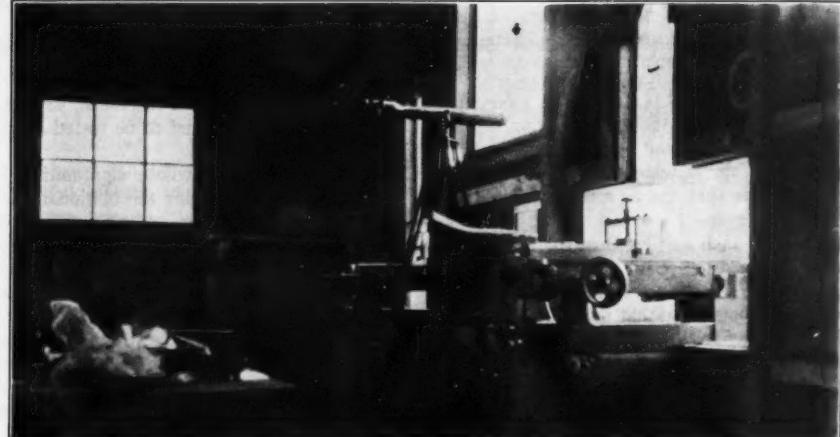
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BETWEEN the conclusion of the National Match test and the gathering of The Ammunition Board at Aberdeen for the Olympic International Tryout, it became known that the technical staff of the Ordnance Department had become interested in the question of the effect on accuracy when bullets with different jacket materials follow one another through the same barrel. This question was given prominence at the 1921 Quantico tests when both Frankford Arsenal and the

crease need be expected by gilding metal following cupro nickel when the barrels were thoroughly cleaned between strings. It was accordingly decided by the board that in the forthcoming trials each competitor should use all of the six Mann barrels provided, firing an equal number of shots through each barrel, with cleaning between strings. It was also directed that the performance of each lot in every barrel be recorded as an additional check on the Aberdeen and Frankford results.

* * *

ON the firing line the following morning, the contestants found that a splendidly equipped shooting house had been constructed covering the high platform from which the National Match test shooting had been done. The front of the new shooting house was



Western Cartridge Company submitted bullets with jackets of gilding metal alloy and argued that it was prejudicial to the accuracy of their samples to fire them through barrels in which cupro nickel jackets had passed. Therefore in tests following each competitor was supplied with individual Mann barrels in which only one type of ammunition was fired.

But a fly was soon discovered in this ointment. Manifestly all barrels are not equally accurate no matter how carefully made, and to arbitrarily assign certain barrels to certain lots of ammunition was considered by the Ordnance Department to be unfair. The winning ammunition, it was contended, should be the one demonstrating the greatest accuracy with all lots using the same barrels. It was also the opinion of the technical staff that no prejudice against accuracy as the result of following cupro nickel jackets would exist if the barrels were thoroughly "doped" between strings. So a series of tests to settle the gilding-metal-cupro-nickel question was arranged and conducted simultaneously at Aberdeen and Frankford.

The full personnel of the Ammunition Board with the exception of Commander T. Osburn of the Navy met at Aberdeen on December 16, the night before the tryout and received the report of these tests. Both at Aberdeen and Frankford the experimental firings had proved quite conclusively by averages which showed only a normal variation that no accuracy de-

pierced with embrasures for Mann barrel rests, on cement piers. Running water was available at each rest, together with tanks of ammonia dope to facilitate cleaning. In short every convenience for the gun crews was there and although the weather was penetratingly cold, the shooting house made it possible to conduct the tests in comparative comfort. Nevertheless the big barrel stove in the corner of the measuring room across the road proved the real center of attraction for such board members and ammunition company representatives as were not on duty in the shooting house or the pits.

The schedule of fire for the first day called for 21 targets of each competing lot at 1000 yards and 15 at 300 yards which would complete one half of the test. Although this quota was accomplished a number of hitches delayed the start of the firing until after 9 o'clock and more delay followed when one of the gunners had difficulty in getting lined on his target.

From the pit where Maj. K. K. V. Casey and Lt. G. L. Wotkyns were in charge came messages indicating corrections for the gunner but these failed to produce results.

Then a figure was seen to leave the shelter of the pit to better observe and locate the error of aim.

And when he stood outside the butts
And peered this way and that—
No watcher from the line could doubt
"Twas Casey at the Bat!"

January 1, 1924

THE AMERICAN RIFLEMAN

5

But just about that moment, the gunner turned loose one that zipped uncomfortably close to the observer. True to the form approved by De Wolf Hopper's hero, Casey promptly "Struck Out" for the shelter of the butts. Yet his brief excursion into the beaten zone had given the clue to the mystery of why a seasoned gunner could not get on the 1000 yard target. Examination of the 600 yard targets showed an excellent group printed on one of them which in the mist of the morning the gunner had mistaken for his long range mark. And so the test finally got under way.

The specifications of the different lots of ammunition submitted to the board disclosed at the start of the test that Frankford arsenal had used fulminate primers in one of its lots. This, it became known, was the result of some experiments toward improving ignition which have been conducted at the arsenal. Because of certain manufacturing difficulties encountered in turning out the fulminate primers, the Frankford crew were not over san-

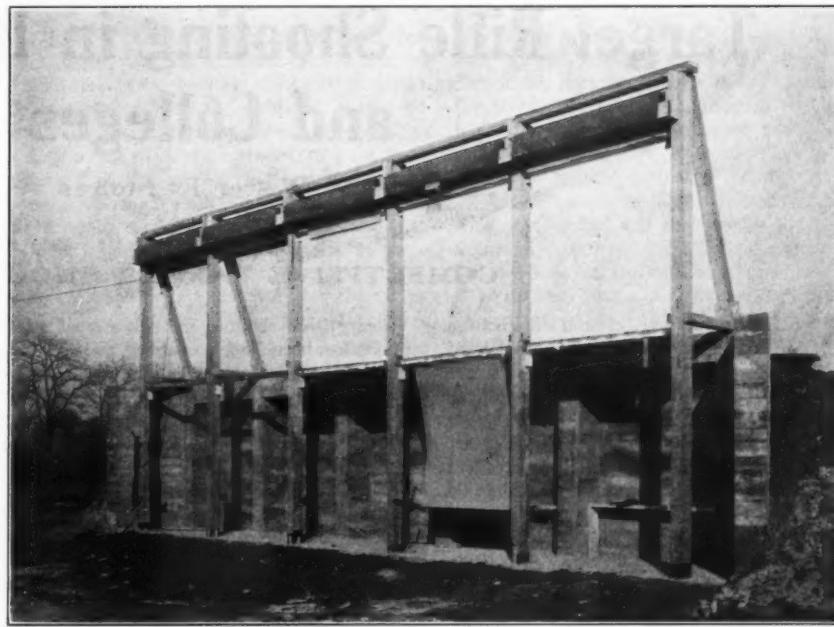


guine of the prospect and their fears were speedily realized when the fulminate primers began puncturing during the first few rounds. In spite of this however, the lot of ammunition which contained them showed creditable if not winning accuracy, and shot slightly better than the Frankford lot made with the No. 70 primer.

Because the board desired that an equal number of shots be fired by all lots through every one of the six Mann barrels, six relays of seven targets each were specified for the 1000 yard shooting. During the first day's shooting, conditions were vastly different from the absolute calm which accompanied the National Match test. The wind was puffy and sufficiently strong to affect both horizontal and vertical dispersion, which could be plainly observed following the trend of the air currents.

As the result of the first seven targets, the Remington 180 grain bullet (Lot 2) took the lead on an average mean radius of 5.63 inches; the Red Ball 200 grain bullet load second, with 5.74 inches; Western 52, third with 6.12 inches, and the others in this order: Frankford Palma A, 6.24 inches; Frankford Palma B, 6.71 inches, and Western 62, 7.30 inches. The targets for the most part showed about an equal vertical and horizontal dispersion, with what little difference there was manifested in the up-and-down scatter.

A change of rests for the second relay, following a thorough doping, saw many of the



Above: BEHIND THE TARGETS AT ABERDEEN Showing the Mechanism which Operates the Roller Targets. Rolls of Paper are Put in Place at the Top of the Frame to be Wound, After the Groups are Shot, on the Roller Below. After a Relay the Roller is Removed and Carried to the Measuring house.

Left: WHAT THE 300-YARD BULLETS DID TO A 12-INCH LOCUST. Below: THE STUMP LEFT STANDING 6 FEET ABOVE GROUND.

(Photos by H. N. Marsh)

groups increase slightly with the strengthening of the wind, but the dispersion continued consistent. At this stage of the test, however, the Remington 200 grain Windjammer was holding its own to within one one-hundredth of an inch of its previous mean radius, scoring 5.77 inches, and maintaining a smaller horizontal than any other lot, thereby taking the lead away from the 180 grain combination on a 14-target radius of 574.5 inches. The Remington 180 grain bullet fell into second place with 6.20 inches, while Frankford Lot A which had also maintained its average, moved up into third place with 6.36 inches. The other contestants showed these averages: Western 52, 6.495 inches; Western 62, 6.96 inches, and Frankford Lot B, 7.19 inches.

The third relay was accompanied by conditions which resulted in the groups of two competitors moving so that several shots went off the paper. This situation caused a vote of the board to disregard these incomplete groups and those corresponding in the records of other entrants. This also reduced the total number of targets with each lot to forty. During the firing of this relay there occurred what is among the smallest groups ever made



at 1000 yards during an ammunition test. This group on target No. 31, made with Remington Lot No. 1 (200 grain bullet), showed an extreme vertical of 7.36 inches, an extreme horizontal of 7.29 inches, an extreme spread of 7.80 inches and a mean radius of 2.99 inches.

With the 1000 ya'd test half completed the Remington 200-grain bullet in lot No. 1 had established its supremacy with a mean radius of 5.559 inches, with the Red Ball 180 in Lot 2 pressing it closely with 5.925 inches. In third place was Frankford's "Palma A," 6.321 inches; fourth, Western 52, with 6.468 inches; fifth, Western 62 with 6.762 inches, and sixth, Frankford's "Palma B" with 6.931 inches.

During the remainder of the afternoon firing on the 1000 yard was suspended and the first half of the International test disposed of, long range firing being resumed Tuesday morning. At this time the weather conditions were about the same, the penetrating cold continuing with the shifty, puffy wind.

The fourth relay (the first of the second day) saw a marked change in the behavior of Western 52 whose group shrank to 5.902 inches, as against its former average of 6.468,

(Continued on page 18)

Target Rifle Shooting in High Schools and Colleges

By Walter R. Stokes

Part V

COMPETITIVE TARGET SHOOTING

ASIDE from the natural fascination which attaches to the mere practice of rifle shooting, its greatest interest lies in competitive firing. Realizing this fact, the National Rifle Association has provided for school and college rifle clubs a schedule of annual competitions which form an excellent basis upon which to found the match program of a club of this class.

The annual matches of the National Rifle Association are conducted under a system whereby officially stamped and numbered tar-

Competitive shooting in educational institutions has been largely confined to team contests, in keeping with the general school policy in favor of group competition. But there are also individual matches, conducted by the N. R. A., which give individual shooters a chance to distinguish themselves.

The competitive aspect of shooting furnishes the mainspring for the sport as a scholastic activity, and the work of the clubs is commonly built around the competitive idea. Practice during the first part of the school term

The coach will satisfy himself that every shooter in his selected group is familiar with the correct principles of all the fundamental matters such as holding the breath while firing, aligning the sights properly, calling the shot, etc.

He will note carefully how each shooter uses the sling in the various positions, and will help each one to determine just how tight it should be for him in each position to insure the best results.

A great amount of carefully directed practice, especially in the unsteady kneeling and standing positions, must be held. It is very important that in practice firing the more difficult positions be emphasized, since by this means the greatest improvement will occur where there is most room for it.

Team members should be thoroughly familiar with the correcting of sights; they should be taught never to fire a shot carelessly; they should become able to call their shots with great accuracy; and they should be impressed that they cannot attain winning results by jerking the trigger as the bullseye "goes by," but can do so only by trying to hold as closely as possible, and squeezing the trigger gently.

SUGGESTIONS TO THE TEAM COACH

SPECIAL EQUIPMENT FOR THE TEAM

No shooter can do his best unless he is physically comfortable while firing. It is desirable, therefore, to devise means for increasing shooting comfort. In the course of firing in the various positions a rifleman finds that the points of his elbows, the point on his shoulder where the butt of his rifle rests, and the back of his arm, where the sling presses, all tend to become slightly bruised and sore. All these troubles can be largely eliminated by the wearing of a suitably padded shooting jacket. The shooting coat which appears in the position photographs already shown illustrates an excellent type. A dungaree jacket or a khaki military blouse makes a good shooting coat, and the best pads are made from sheepskin with a half-inch of wool on. Practically all experienced shots equip themselves with a coat of this sort.

Some shooters like to have their shooting coats split up the back to permit great freedom of action in assuming the various positions, while others prefer a tight-fitting coat for the support which they believe it affords.

Leather buttons are much more comfortable to lie on than are heavy metallic ones.

The use of a high-powered telescope in the spotting of shots fired upon the target is a



Fig. 27—High Sitting Position, Ankles Crossed

gets are sent out to competitors to be fired on home ranges, under a designated judge, and in the presence of witnesses. After the targets have been fired upon they are returned to N. R. A. Headquarters to be officially scored.

National championships are decided under this system, and in general a very attractive and ample program is provided. It has been found that this type of competition develops much of the interest and excitement of a shoulder-to-shoulder contest, and the conducting of these matches has become one of the principal functions of the National Association.

Clubs everywhere are also encouraged and aided by the N. R. A. in the holding of dual shoulder-to-shoulder and telegraphic matches, and this form of competition is rapidly increasing its already great popularity.

generally resolves itself into an elimination process by means of which the team is finally chosen at the mid-term season when the N. R. A. matches begin.

It does not take a competent coach long to determine which shooters are the best team material, and it is desirable that as soon as possible after the opening of the school term a selected team squad be given special training in contemplation of future match shooting. This special training should proceed along the following lines:

The coach will observe closely the various positions assumed by his shooters, and will try to help each to discover the variation of each particular position which is best suited to the shooter's individual physique. This is a matter of the greatest importance, easily the most important single thing in coaching.

custom generally practiced by experienced riflemen. Almost everyone can without much difficulty get possession of an old "spy glass," which will be quite an efficient "spotting scope." Good binoculars also may be used with satisfaction, but those of the lower grades are likely to be so lacking in magnification and optical definition that their use involves harmful eyestrain.

Many of the best shots wear a glove upon the left hand in order to decrease the bruising effect of a tight sling where it passes over the back of the hand and wrist. A soft leather gauntlet glove is excellent for this use.

The wrapping of adhesive or tire tape around the fore-end grip, and butt of a rifle is a thing sometimes done in order to prevent slipping at these points.

The telescope sight is a sighting device occasionally used because of the great optical accuracy it affords, but it really does not noticeably aid a shooter's scores unless he has poor eyesight. The use of telescopic sights by school and college clubs is not generally to be recommended. It should be clearly understood that the use of the telescopic sight ordinarily gives a shooter little advantage over his opponent who uses the metallic peep rear and aperture front sight combination.

TECHNICAL MATTERS

Before a rifle is used for the firing of a match score its mechanical condition should be painstakingly inspected; the bore should be free from lead or powder fouling; the barrel should be screwed tightly into the frame; the trigger should require not less than three (the officially required minimum) nor more than four pounds pull to release it; the sights should be firmly attached to the rifle; the adjustments of the rear sight should be in perfect working order; the rear peep should be unobstructed; the front sight should be dry and clean; the loading and firing mechanism should be functioning perfectly and be only slightly oiled; the sling should be properly attached; and all screws in the rifle should be screwed tight. Attention to all these details before firing begins will obviate many of the common excuses for an unexpectedly poor score.

No shooter should be allowed to fire upon a match target until he has perfectly and unquestionably sighted in his rifle.

In match firing the exact position of each shot should be closely observed through a telescope; the changing position of the center of the shot group should be carefully followed, and sight corrections be made accordingly, the coach himself making the changes. The center of the shot group will often change, sometimes gradually, sometimes suddenly, for reasons such as increased fouling in the barrel and changes in the position in which the shooter holds the rifle. One of the principal duties of the successful team coach is to note carefully the smallest change in the shooter's group, and to hold him in the center of the bullseye. Sight corrections should be made as soon as it appears that the shooter is consistently a little off center; the coach should not delay a sight change until the center of

the group has shifted entirely outside the bullseye.

Whenever the shooter's hits begin to wander from center the coach should require him to "call" his shots, because obviously it would be unwise to correct the sights for variations which the shooter admits to be due to his holding.

It is a fact to be remembered, that the temperature of the air has a decided influence upon a rifleman's work. When the weather is warm one's muscles relax, and the steadiest holding is possible; but when it is cold one's muscles tend toward contraction, and are as a result more readily susceptible to the vibration or shaking which accompanies muscular contraction.

No team should be permitted to fire a match until the ammunition to be used has been carefully tested, and proved satisfactory. There is great variation among different factory lots of the same specifications and trade name; in consequence the only way to be sure of the quality of ammunition is thoroughly to test it by actual firing.

There will sometimes be found among the best of factory-loaded ammunition some cartridge cases or bullets which have been jammed, dented, or otherwise deformed in loading or handling, and on this account it is well to examine every cartridge individually before firing it in a match, and to reject all which show an irregularity of any description.

lead fouling will become so heavy that a "long" or "long rifle" cartridge can no longer be inserted in the chamber. It is a fact, too, that "short" ammunition will not shoot with dependable accuracy from a barrel chambered for the longer cartridges, because the bullet begins its flight in the chamber and "takes" the rifling of the bore while traveling so rapidly as to become mutilated thereby.

Some rifles can be fired hundreds of times without cleaning, and continue to shoot very accurately; others, with deeper grooves or rougher bore surface, will foul rapidly, and will show an impairment of accuracy after perhaps only twenty shots. This is a matter which the coach should investigate in connection with his particular rifles.

The coach should personally adjust the trigger pulls of his team's rifles. All trigger pulls are adjusted upon a similar principle: the upper end of the trigger fits in, or communicates with a point or sear which fits in, a notch in the hammer (or firing pin rod in a bolt action); when the rifle is cocked, the sear is engaged in the sear notch, and as the trigger is pulled the sear is pulled out from the notch and the hammer released. Hence the matter of how hard the trigger must be pulled in order to fire the rifle depends upon how securely the sear is engaged in the sear notch. By blunting the sear and making it fit the notch insecurely the trigger pull can



Fig. 28—A Good Position for a Few Shooters of Unusual Physique

The firing pin in a match rifle should not be so long as to indent deeply the base of the cartridge case; this condition leads to a weakening of the base of the case and creates a strong possibility of a rupture case and the backward escape of powder gases, with a resultant impairment of accuracy in the flight of the bullet.

The breech-block of a match rifle must be so tight fitting as to prevent the backward escape of powder gases, if uniform accuracy is to be obtained.

"Short" cartridges should not be fired in a rifle chambered for "long" or "long rifle" ammunition. This practice is likely to result in the formation of a lead deposit around the forward end of the chamber, and in time this

be lightened, or *vice versa*, by pointing the sear to a better fit in the notch the pull may be made heavier. The sear should not be worked upon with a file! an oil-stone should be used.

The release of a trigger should not be preceded by "hitches," or small movements; it should be clean and certain. "Hitches" are caused by a roughness of the bearing surfaces of the sear and sear notch, and whenever a "hitch" is detected these parts should be smoothed with a fine oil-stone.

"Long rifle" ammunition is generally preferable to the "short" cartridge for match shooting, simply because highly accurate "long rifle" ammunition is easily obtainable, while it is often difficult to secure the highest grade of

the other type of cartridge. This condition exists because of the fact that manufacturers have a great demand for exceptionally accurate "long rifle" ammunition, on account of its extensive use at ranges too great for the "short" cartridge. It is, nevertheless, possible to procure "short" ammunition which at fifty feet will deliver accuracy and uniformity equal to the best results obtained with the more powerful cartridge.

Ungreased bullets and smokeless powder should be avoided; the former cause undue barrel wear and the latter is both chemically more harmful to the bore of the rifle and less productive of accuracy than "lesmok" or "semi-smokeless" powders.

The "long" cartridge should be distinguished from the "long rifle"; the latter differs from the former in that it has a heavier bullet. The "long" cartridge is not suitable for target shooting because it does not represent an accuracy producing combination of powder charge and bullet weight. Also it is seldom manufactured by the extreme precision methods which are employed in manufacturing target grade "short" and "long rifle" cartridges.

As a general proposition it is harmful to snap a "hammer" rifle on an empty chamber; there should be an empty cartridge in the chamber, or a piece of rubber should be placed between hammer and firing pin. A bolt-action rifle may usually be snapped on an empty chamber without harm, but this is not always true. The harm which is likely to be done by snapping on an empty chamber is that the point of the firing pin may strike the unprotected rim of the chamber and there raise a burr in the metal sufficient to interfere with the proper insertion of a cartridge; also the point of the firing pin may be snapped off. Firing pins can be carefully shortened enough to eliminate the possibility of this trouble, and still be long enough to function properly.

A team coach should always keep on hand spare rifle parts which may be needed in an emergency situation; parts in this classification are the mainspring, trigger spring, extractor, and firing pin.

REGULATION OF A SHOOTER'S DAILY HABITS

The quality of an achievement in any direction is governed, much more than most of us realize, by our physical condition at the time we act. The temper of our mental attitude, as well as our muscular powers, is strongly influenced by our bodily condition. The shooter who would excel must possess an exceptionally strong, healthy, well-controlled mind, and since his general bodily health so definitely affects his mental balance, he must have a thoughtful regard for the building up and preservation of the best of health.

What the successful rifleman needs is poise and control, rather than any phenomenal specialized muscular development. A strong physique is, however, of great value to him in enduring well the muscular strain of a many-shot match. These being the physical needs of an expert shot, the ambitious beginner should try to fulfill them in his own case.

Because of the great variation in the natural qualities of individuals, it is not possible to lay down any set of precise rules as to how he should do this, but from my own experience and observations I offer the following suggestions as to how it may be done:

1. By the building up or maintaining of good general health through daily calisthenic exercises or outdoor sports—particularly swimming.
2. By the regular eating of varied and individually agreeable foods in careful moderation.
3. By the obtaining of all necessary sleep, but no more than is really individually necessary.
4. By abstinence from the use of any stimulants, such as tobacco, tea, or coffee.
5. By the doing of any individually peculiar things which tend to develop a sense of well-being, if such things are not physiologically harmful.

MATCH PSYCHOLOGY

After the aspiring young rifleman has acquired a fair amount of skill and enters competition he is faced by a somewhat new prob-

lem quite naturally into his mind under appropriate match conditions, but because of the symptoms they tend to produce he must learn to develop in his shooting such an attitude of complete absorption that he can maintain his poise and a keen muscular and nervous control.

It is very doubtful if any shooter who was thoroughly interested in a match, and a real contender, ever fired his score without experiencing in some degree the symptoms of match nervousness; but the winning shooter is the one who can, upon the prompting of his symptoms of nervousness, summon with the firing of each shot a fierce, intense concentration, to the exclusion of all else. The development of ability to do this is accomplished by strong conscious effort, and is aided by the practice which comes with experience. Experience alone, however, will never serve more than to modify the common tendency toward match nervousness.

It is not desirable forever to be cautioning a shooter "not to get nervous," nor for him to believe that he never gets nervous, for suppression of this sort is likely to be worse than useless. It is best for him to understand and



Fig. 29—Low Sitting Position from Right Side

admit the possibilities of nervousness; to try hard to develop the idea that he is certain to make good anyway; and to force himself into an independent and complete preoccupation with each shot by itself. Success in doing this brings with it a general poise and firmness of mental grip such as is equaled by the results of few other types of mental training.

In the selection of his team for a match the coach must avoid choosing shooters who will not continue to do their best after a poor start. There are some individuals who have an exceptional tendency of this sort, and of course the ideal team man is a shooter who can fire each shot unaffected by what he has done previously, or who is spurred to a better effort by a poor start.

Since mental condition enters so largely into the success of a rifle team, every coach should

(Continued on page 15)

Shotguns, Powders and Cartridges

By Capt. Chas. Askins

Part IV—The Cartridge and the Gun

AS has been stated, when a man has a gun he has a gun and it doesn't change any more except the minor changes due to heat and cold or to lead and rust in the bore. The gun is built for standard loads and should do well with them; the more nearly bore and load approach the standard the better the results, probably. However, though to all evidence the barrel is standard in its boring, yet it will shoot some one load better than it will other loads, which may vary in length of shell, kind or quantity of powder, size of shot, or other variations. One of the tasks the owner has is to find which load behaves best in his gun, and stick to it.

We will begin by stating the principles which govern the fitting of a load to the barrel, even though by so doing we may repeat to a certain extent. Beginning with the case, a close fitting shell is some advantage because it cannot then expand very much, which would of course permit the shot column to expand with the case. An expanded shot column has to be pinched back to its original size or smaller by cone and bore, and this pinching process results in patchiness if not in shot balling. Little space need be devoted to the fit of the shell or the chambering of the gun, for the ammunition maker fixes the size of the case and the gun maker controls the chambering, both being beyond our help. The writer much prefers a thin, tough paper, and is keen to have his chambering a few thousandths of an inch small at the upper end, but all this has to be settled when the gun is built.

Though the advantage of a close fitting shell is to be granted, yet a tight shell or one that will not extract easily is a simple form of a nuisance. We can trust the gunmaker to allow plenty of case tolerance, for he doesn't know what is to go into his gun and has to make allowance for cases that vary somewhat in both length and diameter.

All shell tolerance and shell variation are as nothing compared with shooting a short shell in a long chamber. The manufacturer may claim that with his form of chamber and cone the gun will do as well with a short case as it will with the one for which the gun was chambered. There is some truth in this claim, too, notwithstanding what I have said above. Certain of our gun factories, for the reason hinted at above or for other reasons, chamber their guns shorter than the case which they advise using. This permits the standard shell to enter the cone a short distance, perhaps a sixteenth of an inch, perhaps an eighth. I believe the Bakers do this and so does the Fox Company. Their experience leads them to believe that this plan results in closer and more uniform patterns, with which conclusion I agree. Now that the gun is chambered short for the case it will handle a shorter case,

or one really the same length as the chamber very well.

The principle of a short shell in a long chamber, however, remains the same. The outside diameter of a twelve bore case, at the muzzle, and also, of course, the chamber diameter of the barrel is larger than the standard bore of a ten gauge, some twenty-five thousandths of an inch larger. If the shot column is allowed to spread into this chamber before entering the cone, it is obvious that the charge must be pinched and contracted to the extent of a chamber diameter of .800 and a bore diameter of .729. This constricting process leads to shot balling, to shot welding, to a top wad canted in chamber and cone, to patchiness of pattern if nothing worse. The man who persists in using short cases in a chamber too long for them is absolutely indifferent to his patterns and it is no use to appeal to him.

It has been said by somebody, somewhere, that a light load may shoot more sharply when placed in a short case. This will bear explaining. We have learned something about resistance, and that a powder must meet resistance in order to quickly bring pressures high enough to burn the powder. Due resistance is usually afforded by the powder and shot, but if both of these are too light then something else must be made to raise the pressure. The cone is a great resistance factor, and the more the shot column is allowed to expand before entering the cone the greater the cone-resistance—the shot are simply jammed into this section of the barrel which affords a momentary check to the movement of the charge and raises pressures very quickly. If anybody doubts this, let him have a sixteen gauge barrel chambered for a twelve gauge shell and see what happens when the cone is tapered down to sixteen bore diameter. Now the short case practically permits the shot column to expand from a twelve to a ten gauge diameter, whereupon it is funneled and forced through the cone. It is one thing to drive a twelve bore shot column through the cone and quite another thing to send a ten bore spread through the same section, and the result must be both friction and pressure. It follows that if our charge of shot and powder are so light that combined they fail to raise breech pressure to the burning point of the powder, we may artificially develop pressure by the added cone resistance due to a short case. By some such means we may add sufficient resistance so that a twelve bore gun will shoot sharply with $2\frac{1}{4}$ drams of powder and $\frac{1}{8}$ ounce of shot, some 12 bores, not all.

Some shotguns are normally high-power or high pressure weapons, and others are normally low pressure guns. One gun will handle well loads of powder and shot which it would

be foolish to place in the other. Naturally weight as governing recoil is a factor, but this we do not intend to treat, taking it for granted that where a man intends to use heavy charges he will have metal enough to back them up. The difference then lies in the chambering, the cone, and the bore. You can't well have a big load without using a long case, and that will do for the difference in chambering, though the close chambering at the mouth of the shell has been mentioned as desirable, and also the advantage of slightly entering the muzzle of the shell into the cone. The bore of the barrel is itself a resistance factor, as affecting the length and diameter of the shot column, and as furthering or reducing friction, and the degree of cone constriction is a prime factor. I have before me a letter from a man in Oregon who claims to have taken a Parker 20 bore and beveled the cone forward for a distance of fifteen inches, in effect having a cone fifteen inches long instead of $\frac{1}{8}$ of an inch. He claims to have improved his patterns about ten per cent. We can't vouch for this.

The English have developed a style of shotgun which they term a magnum or chamberless shotgun. It has two forms. In one form there is no true chamber and no cone whatever, the case simply extending up into the barrel any desired distance. The case must be the thinnest sort of brass, for the wads have to expand to the thickness of this case in order to seal the bore. With a thicker paper case the wads might not expand sufficiently and gas would get into the shot. With this brass case, since there is little added resistance due to crimp and none to cone, black powder was once considered the only compound that could be used effectively, but later smokeless powders were used, resistance being built up by what would be considered immense loads of powder and shot.

Since in such a gun there is no cone and no cone contraction, the bore must be as large as the chamber. Owing to the thinness of the case the chamber might be as large as standard, might be reduced from .800 to something like .775, the bore diameter of the ten gauge. We would therefore have in what is nominally a twelve bore, that is, a gun chambered for a twelve bore shell, a gun which is in every other essential a ten bore. Due to the lack of initial resistance and to the bore diameter, we find that such a gun is not at all adapted to moderate loads or even to what are commonly termed heavy loads. Its charge is given as five drams of powder and one and a half ounces of shot. We thus see carried to a logical conclusion the principle that resistance and clean burning may be gained by the simple addition of powder and shot. Such a gun would be useless with standard loads which would sound like squibs and shoot about

as hard. I might add that Henry Sharp, the English expert, says that he doesn't like this form of Magnum.

The other form of the gun has the case, which may be of brass or paper, butt directly up against a very slight cone. The barrel is overbored, and is intended to be the same size as the cross section of the shot column when it has expanded within the case under initial pressure. The charge therefore travels from where it rests in the case into the true bore with little expansion and little contraction. With the bore perhaps nearer eleven than twelve we can yet count upon some cone and barrel resistance, hence find the second form of Magnum using less powder and shot than the first, using loads of four and a half drams of powder and $1\frac{1}{8}$ ounces of shot. In either style, using the loads mentioned, breech pressures will not run greatly above standard. The Super Fox, now being built in this country, is planned to some degree after the second form of English Magnum. Our English friends optimistically give the killing range of one of these guns as one hundred yards on waterfowl, but we think they could safely reduce this by about twenty-five yards. Cartridges are now being built in this country for the Fox or for similar English arms, chambered for three inch shells, and shooting a heavy charge of progressive burning powders and $1\frac{1}{8}$ ounces of shot.

It is to be seen what constitutes a Magnum twelve or a Magnum of any other gauge, for the guns can be had in bores both smaller and larger than twelve. Some of us can perceive the utility of such arms in long range wildfowl shooting, and we can see that the principle involved is that of doing away with cone resistance and substituting for it the resistance simply due to powder, shot, and wadding. The cone has been pronounced a necessary evil. However, we are willing to state that under some circumstances neither the crimp nor the cone is an evil, but both are strictly necessary adjuncts. The reader will probably at once perceive why this should be so. How many have tried to shoot an uncrimped or even a poorly crimped shell loaded with smokeless powder? Didn't the cartridge appear to lack energy?—lacked kick anyhow. Do away with the cone and we must use a heavy powder charge and a very heavy shot charge. We have been told that a gun without cone, with an enlarged barrel, is comparatively useless except with very heavy charges; that it can by no means be made into an all-round gun, nor used for an all purpose weapon. It is no more to be desired for general shooting than an elephant rifle is to be selected for deer shooting, though in its own field it is supreme.

Not every man requires a powerful long range weapon or a powerful long range load, or in any event such arms will not be demanded for some of his shooting. Certain kinds of game are killed habitually at short range, and the load should be light—gun of the same nature—light weight and handy. Such arms would be difficult to obtain without cone resistance. For the great bulk of upland shooting the cone belongs right where it is. Matter of fact the run of our powders and the

loading processes of our cartridge builders have been developed to fit that cone and without it both guns and cartridges would prove ineffective.

The sum and substance of all this is that in the near future we may expect specialization in shotguns just as we have specialization in rifles. The duck gun will not be used on quail nor the quail gun on ducks, while the trap gun will be nothing but a trap gun. My own belief is that guns ought to be divided as to gauge also, the twelve used for ducks only, smaller gauges taking its place in the field. The powders used in one class of arm or the other should not be the same. Our present standard bulk and dense powders are perfectly adapted to field shooting, also to trap shooting, and nothing better is likely to be developed within their particular field. Not one of these powders is at all adapted to heavy duck loads, and from my experience the attempt to use much heavier than standard factory cartridges with any of our ordinary powders is purely a waste of time. In overbored or Super twelves, magnums, whatever they may be called, slightly heavier than standard loads of present powders can be shot, but not heavy enough to make a material difference.

The man who desires to go to heavy loads and heavy guns must at the same time select his powder with this object directly in view. Fortunately we now have such powders as Du Pont T (formerly called De Luxe) and in Du Pont 93. Du Pont T is made in two brands or lots, one a fine grain and the other coarse. The fine grain will work nicely in standard loads, but is not so well adapted to very heavy loads. The coarse brand of this powder will not work at all in light loads but must have the resistance due to at least an ounce and a quarter of shot, and preferably an ounce and five sixteenths or an ounce and three eighths, the factory charge. I have myself shot an ounce and a half of shot, using this powder and getting very effective duck loads, but my gun is a very strong arm, and was especially bored and coned for the heavy loads.

Du Pont T is not on the market and may not be for all I know, but it is such a superior powder, the best ever made in my opinion, that it should come into use some day, notwithstanding that it costs more to make than other powders. Almost the same in ballistic qualities, however, is Du Pont Number 93. This powder, though altogether different in appearance, behaves precisely the same as Du Pont T. Perhaps the range of tolerance, that is the variety of loads which may be used with it, is a trifle short of the tolerance of Du Pont T, but when the load is fitted to the powder, 93 is not excelled by any powder made. Like the other it is a progressive burning compound, starting a heavy shot charge at a comparatively light breech pressure, and continuing to drive the load at increasing velocities to the muzzle. With either of these powders breech pressures are markedly light for the work done, incomparably lighter than would be the case if ordinary powders had to drive the shot charge at the velocities now

secured with the progressive compounds. We thus have duck loads at normal pressures which drive an ounce and three-eighths of shot in twelve bores, at a velocity as high as is commonly secured from an ounce and an eighth of shot, and a heavy standard powder charge. Let me repeat again, however, these are duck powders, heavy load powders, not adapted to field shooting nor to trap shooting, and not intended to displace standard powders except for waterfowl shooting.

In order to get good work out of these powders in their heavy charge an overboring of the barrel or an extremely heavy gun is not strictly needed. However some overboring and some cone reduction is an advantage for such arms, permitting heavier loads at lessened pressures, and the extra weight takes up the recoil.

Bear in mind that while our progressive powders do lessen breech pressure and are safe to shoot in ordinary guns, yet they do not correspondingly reduce recoil, which will impress a shooter as being ample, should he use a light gun.

With Du Pont T in loads of $1\frac{1}{4}$ ounces of number 4 shot, I have seen shells loaded that developed a velocity of 1070 feet over a forty yards course, indicating a muzzle velocity of better than 1500 feet. Patterns were not good, however, and the indication was that we had no shot hard enough to stand up well under such a drive. While so called express loads, those having an instrumental velocity of around 1050 feet, can readily be developed, using either Du Pont T or Du Pont 93, yet, for the sake of good and regular patterns it has been found wise to limit velocities to about 1025 feet, some 50 feet higher than standard duck loads with bulk powders.

The Remington game loads are a move in the right direction, and are really the last word in load building, using standard powders. The only one of these loads I could find fault with would be the heavy Duck Load, which I think is rather too heavy for the powders. I would replace that particular cartridge with a progressive powder load, using either Du Pont T or Du Pont 93.

For all game shooting, including ducks in light guns, what the English term game guns, I see no need of any powder charges other than 3 drams, $3\frac{1}{8}$, $3\frac{1}{4}$, and not to exceed an ounce and 3-16 of shot except for trap shooting. All other loads, based on standard powders, bulk and dense, might well be omitted. In twenty bores I'd personally like to see all loads dropped except one containing $2\frac{1}{4}$ drams in bulk or dense, and $\frac{1}{8}$ of an ounce, with one load of progressive powder driving an ounce of shot. In sixteen bores, a load of $2\frac{1}{2}$ drams bulk and one ounce of shot has always served me well. For heavy sixteen bore duck guns the progressive powder load of $1\frac{1}{8}$ ounces of shot might be proper. I have never seen a sixteen bore duck gun which could stand at all on equal terms with a twelve. The correct and only charge for a twenty-eight, is some seventeen grains of Du Pont T and $\frac{3}{4}$ of an ounce of shot. Having used this charge few would ever be willing to go back to bulk powder and $\frac{5}{8}$ ounce of shot.

Selling Rifle Shooting to Your Community

By C. B. Lister

Part II

CONDUCTING THE MEETING

PRELIMINARY planning and publicity all attended to, the Big Night arrives. Two or three, not more, of the Club's best "glad hand artists" are stationed at the door. As the regulars arrive they are sent over to the Chairman of the Entertainment Committee and given something definite to do. Nothing interests a man in anything so much as working for it. The club's "rocking chair brigade" will probably be out in force. Treat them much the same as you do the outsiders.

When a stranger steps in, the doormen give him the glad hand and steer him into one of the groups that is gathered about the nearest collection of artillery. Keep the strangers moving about *in groups*. The man who slides in alone, looks at the guns and other exhibits alone, sits by himself to look at the pictures or hear the talk, will slip out alone and will, in the majority of cases, be lost to you. In groups we meet old acquaintances, we become friendly with strangers, and we "warm up" and begin to feel as though we want to "belong."

Your mixers work overtime now. They introduce everybody to everybody else. They explain everything, they answer a million questions, they start discussions, they guide the drift of the conversation and keep it in relevant channels. Without the mixer, an affair of this kind will prove a flat failure.

The plan used at a New York Central Rifle Smoker of passing out corn cobs and tobacco at the door puts everyone at ease and establishes the democracy of the corncob, all of which adds to the conviviality of the occasion.

When everyone has looked around and met several fellows he did not know before and the room begins to take on the blue haze of good, bad, and indifferent tobacco, the Chairman springs into the lime-light. He jovially crashes into the saddle, has the chairs rushed out, introduces the speaker or explains the movies and sits down (but not out). Snap is essential, don't let them lose interest or sneak out the door at this stage.

The speaker of the evening must know how to talk. And if he knows how to bring out all the rifle points as he tells his yarn, so much the better. As soon as he is finished the Chairman is in action again. Rapidly he explains how all this ties together. If the audience were not interested in the out-of-doors it would not be there. Being interested in that subject, it is interested in rifles and pistols, the truest American out-door man's arms.

The excellent tale, most of which is probably true, that they have just heard from their fellow citizen and hunter, stressed particularly the sport obtainable by the trained rifleman. There is the point—the *trained* rifleman! Many people have the idea that the rifle club

fritters away its time shooting holes through a black spot in a piece of paper. Just how absorbing that game is in itself is more apparent after you find how interesting it is to even *hit the paper* at first and under some conditions. The target shooting is an essential part of *training* of the game shooter.

Naturally it is much easier to teach a man to shoot, to squeeze the trigger, adjust his sights for different ranges, etc., if he starts out by shooting at an immovable object where the effect of all the changes he makes can be plainly shown him. And then too, there are many of us who have but scant hope of ever getting to the big game fields, much as we would like to. Why not enjoy at least some of the game hunter's thrills, get our lungs and eyes full of Old Mother Nature, and enjoy the good fellowship of the open places by becoming acquainted with the rifle and pistol range.

Then there are the opportunities for national prominence through the matches conducted by the N. R. A. in which each club or individual shoots on his own range. The National Rifle Association is a powerful organization numbering many thousands of individual members and affiliated clubs. Gallery small bore and military rifle matches are conducted the year round right on the club's home range. Members may procure Government arms and ammunition, a privilege enjoyed by no one else, they may purchase commercial target rifles and ammunition at considerably below the regular list, they may qualify for decorations as Marksman, Sharpshooter, or Expert Rifleman with either the .22 rifle or the Springfield on the local club's own ranges. And then, the crowning glory of all, the opportunity for the rifleman to represent his state at the National Rifle Matches.

If the special effort has been made to get members of the municipal and local industrial police, under which category we might include bank runners and messengers, to attend the meeting, it would be a splendid idea to have someone well known to these men point out the absolute necessity for training with the revolvers which form a regular part of their equipment.

If the Government has found it advisable as a result of bitter experience to spend money for the training of National Guardsmen in the proper use of the rifle, which in all probability they would only have occasion to use once in a life-time, how much more necessary is it for the officer of the law or the guardian of property to spend a little time and money in learning how to handle the gun which he may be called on to use at any minute of the day or night, and probably will have to use

three or four times to the National Guardsman's one.

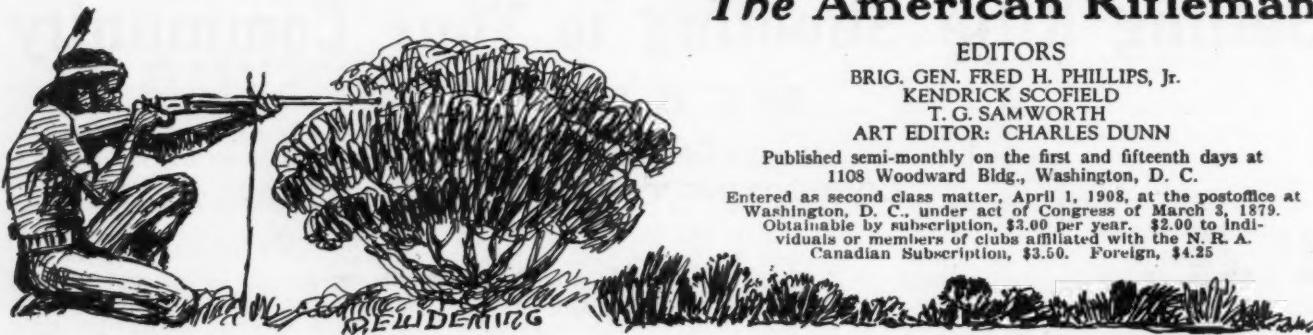
As in the case of the sportsman with his rifle, there is only one place where a man can be taught to shoot a revolver, and that is on the target range. A few rounds a week judiciously expended at a good big target soon teaches a man whether his gun shoots high or low, right or left, promptly shows up his flinching and trigger jerking tactics, and by reason of showing just where every bullet strikes, indicates what he must do to get hits in the black. The idea that it is a waste of time for a patrolman whose mark will ordinarily be a swift moving figure, to engage in target practice at an immovable target, is an absurdity because until he has learned to hit an immovable target with more or less regularity, what chance under the sun is there for him to expect to hit a fast moving target.

The club is equipped with targets suitable for slow fire, and rapid fire handgun work. If the police and bank men evidence sufficient interest, bobbing targets can be installed, so that having learned first to hit what they are shooting at, when the object of their animosity is standing perfectly still, staring at them, they can then advance to the more important training of quick-draw, rapid fire work.

It is true that in many instances the police department of the larger cities have been prime offenders in advocating anti-firearms laws. This has been due solely to lack of appreciation of the fact that the average citizen with a gun is not nearly as dangerous a character as the average thug with a blackjack, and due to the fact that numerous police are killed every year by thugs armed with a gun because the gunmen are absolutely sure in advance that they are perfectly safe in reaching for their weapons, as there is no possibility of the untrained patrolmen beating them to it.

No statistics have as yet been made available by anti's or anybody else to indicate that the thugs were more anxious to be killed than were patrolmen, and it is a fact amply demonstrated in numerous communities that when the police learn how to shoot and that fact is made known through the newspapers, the number of attempts to shoot the guardians of the law promptly diminishes. In one case that we know of personally, there were five patrolmen killed in one year, (this being the year before the police force decided it was time to learn how to shoot). In the six years since there have been but four people killed in duels with policemen, and those four were the would-be gunmen.

(Continued on page 15)



The American Rifleman

EDITORS

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IN establishing as a regular feature the new department "Firearms of Yesterday," the AMERICAN RIFLEMAN has insured to its readers a complete service covering the entire field of powder weapons ancient and modern.

There are very few shooters who are not interested in the pistol rifles and revolvers of bygone days. The fact that questions sent to the Dope Bag frequently

"Firearms of Yesterday" refer to arms of past generations is evidence of this. In addition there are in this country literally thousands of firearms collectors who

have had no common medium through which to keep in touch with one another. It is especially fitting that these collectors be given a place in the circle of American riflemen.

In line with the AMERICAN RIFLEMAN policy that all the information given to its readers must bear the stamp of authenticity, the services of Capt. Jerome Clark have been obtained. Captain Clark is well known to firearms collectors. He is a thorough student of American arms and of such European weapons as may be directly in the line of development which resulted in the production of American types. There are few today who have a more intimate knowledge than Captain Clark of American firearms and in addition he is a practical and enthusiastic shooter. His attainments in his own field, entitle him to a place beside Maj. Whelen, Maj. Hatcher, and Capt. Askins who have done such splendid work with their departments.

"Firearms of Yesterday" will mean even more to the readers of THE AMERICAN RIFLEMAN than an information department on obsolete weapons. In connection with it there will be included in the magazine a classified "ad" column devoted to the purchase sale and exchange of obsolete arms. This will open channels through which the practical rifleman may dispose of such "old-timers" as he may not wish to retain and through which collectors can effect sales or exchange of their duplicates and obtain needed specimens.

The editors commend to AMERICAN RIFLEMAN readers the new department. It is worth perpetuation. If you have a friend who is interested in the old, rather than the modern, among firearms, tell him about "Firearms of Yesterday;" or send us his name and address and we will get in touch with him. If you have any antique weapons you do not want, dig them up and advertise them.

Make the new department as great a success as the Dope Bag.

WHEN sundry reformers begin an active and vindictive campaign in large cities—especially New York—it is a perfectly fair assumption that somebody is paying for it.

Anti-firearm propaganda of late is becoming too recurrent, too widespread and too vitriolic—even with its few proponents—to warrant any assumption tenable than that there is plenty

Who Supplies the "Jack?" of money behind it. An excellent example is that furnished by a former New York police department official whose nit-wit maunderings began a year ago and have continued to affront the ears and insult the intelligence of white Americans.

This particular pest preaches a doctrine of disarmament from a city where, if ever the police force was powerless to cope with crime, it is powerless today and where the citizen, in the absence of adequate police protection, must defend himself against banditry, thuggery and worse.

Ask any intelligent New Yorker who would be benefitted most by a disarmament program, the citizen who would in most instances surrender his weapons or the thug who would retain his, or in the unlikely event of confiscation, "bootleg" a new equipment. The only answer possible is fairly obvious. Also that New York gangsters could well afford to spend a little "Jack" to bring about so favorable a condition as an unarmed citizenry.

But whether or not gang money is behind the anti-firearm campaign, the mentally strabismic microbe who urges the passage of laws prohibiting the manufacture, sale and possession of firearms is not, as he might believe, giving him the benefit of the doubt—on the side of law and order. He is rather the stout ally, the shield and buckler of the crook. With him abroad in the land, the League of the Lawless may rest confident that if it is possible to hand over an unarmed citizenry to pillage, the anti-firearms fanatic will do so. Fortunately for the security of future generations there is little likelihood that white Americans will submit to the reformers' suicidal program.

Right-minded white Americans will not be long in thinking out the answers to these questions for themselves. When they do the day of the loud-mouthed anti-firearms agitator and friend of the crook will be done. Meanwhile an armed white American citizenry is the only assurance of safety.



FIREARMS OF YESTERDAY

A Department
For Collectors

CONDUCTED BY

Captain Jerome Clark

ANTIQUE firearms is a subject to which there is no determinable end. All too little is known of the mythical ramifications which surround the weapons of yesterday. That is why when the editors asked me some weeks ago to conduct this new department in THE AMERICAN RIFLEMAN, I told them there was "nothing doing." It is too big a task for any one man; also there are too many other people who know far more than I about the subject.

However, as there seemed to be no available timber on the ground, I have been prevailed upon to "do my durndest"—which I am going to proceed to do. If I know my brother collectors, there is little fear that the department will lack interesting and informative material. They can be depended upon to take advantage of the space allotted to this field for the threshing out of the thousand-and-one questions which crop up whenever two of the brotherhood meet.

I had in mind starting out with some advice to the new collector—but, what's the use? Let anybody collect what he pleases. Whatever he chooses, will bring him pleasure, and we are not going to run the department exclusively for "the Plutes."

One cannot collect everything and there is a wide field to draw from. Each era of the world's history since the discovery of gunpowder, has seen the rise and decline of specific weapons and each nation in turn has its period firearms. Though far from common in occurrence it is still possible to obtain many desirable and interesting specimens. What more could a collector want in the way of opportunity?

But there is one thing which every collector young or old in the fascinating game must bear in mind—there is a vast difference between worth while firearms and junk.

When the dyed-in-the-wool collector drops in to see some man's treasure and finds it to be a lot of old and worthless scrap, it does not give him much of a thrill. I have seen six pieces which constituted one man's entire collection, but each was such a gem in its class that I could hardly be prevailed upon to leave.

And so this one thing I would say to the young collector: select the class of firearms which gives the greatest thrill and go in for quality—not quantity.

The firearms collector's greatest need today is a good trade medium through which the collector

can keep constantly in touch with his fellows in the craft so that he may miss no opportunity to fill the gaps in his collection or dispose of his duplicates.

The AMERICAN RIFLEMAN through nearly forty years of continuous existence has always been the best medium for this purpose. So send in your "Want and For Sale" ads and get results. No person in this department is in any way connected with dealers in antique arms nor will any one be in any way benefited financially.

Several months will probably be taken in getting this department running smoothly so that it will meet the collector's needs and be able to exercise the most critical selection in the matter of contributions.

* * *

WE have already had many compliments on the splendid serial "Hand Gun History" by Roy C. McHenry which began in the August 1, number and hope soon to have the balance of the handgun period—both modern and antique, adequately covered.

Many collectors to whom the author of Handgun History was until lately unknown have asked, "Who is McHenry?"

Although he has treated his subject more comprehensively than it perhaps has ever been treated before, be it known that Roy C. McHenry is really a neophyte in the firearms collecting field and his "Handgun History" is his first work along this line. During the World War McHenry was an agent of the Department of Justice and from the files he dug accounts of long forgotten cases in which long forgotten weapons figured. This reawakened in McHenry a lifelong, if temporarily dormant, love for firearms of the past with the result that he undertook to compile a history of the development of multi-shot handguns.

Mr. McHenry is at present a practising lawyer in Binghamton, New York, and has for many years been an enthusiastic and practical target shot.

* * *

FROM S. S. Sherwood of Bethel, Conn., who learned of the establishment of the new firearms department has come a letter which very aptly sets forth the plight of the firearms collector

who has had no common meeting place with the brotherhood. He says:

"If there was ever a field of collecting wherein the collectors needed the help they could get from one another, it is in arms collecting because so little is known about firearms that is authoritative.

In other lines of collecting, say Numismatics, there is very little that is not known. Dig up a coin at any of the four corners of the earth, and some will tell you readily all about it; there are a few points they don't just understand like the issue of the 1804 dollar but such incidents are rare. Whereas with arms, everything, so to speak, is in the air.

I have personally spent more time studying old arms than the average college student gives to any special course. The most I find out is what I don't know about them, and the reason for that is this, there seems to be no place available where one can study a large collection so as to be able to make comparisons. For instance the Museum of Old Arms at West Point, as far as I could find from searching around it lacks a single specimen of the French musket used here in the American Revolution or a single specimen of the C. of S. musket. I did find one lone Brown Bess. Nor could I find a single American flintlock rifle, that is, a "Kentucky."

The collection of the U. S. Cartridge Co. which I am told is now in the National Museum, did not contain a C. of S. musket, and the French musket they illustrate and describe, is not true to type, that is to the specifications given out by the French government.

Turn to your firearms authors and you will find they cannot answer one question in ten—and get it right, but I feel confident that if we could get a few hundred earnest students of old arms together, through the medium of a magazine, we could ask questions and find out something."

That is how one collector feels and no doubt many others feel the same. If so it should not be long before "Firearms of Yesterday" becomes, in fact, as well as in purpose, a clearing house for information.

J. C.

A Forsyth Percussion Pistol

By Francis W. Breuil

IN the early years of the 19th Century, a Scotch clergyman, the Rev. Alexander John Forsyth, of Belhelvie, Aberdeenshire, conceived the idea of using a fulminating compound for the ignition of the charge in fire arms, in place of the flint lock which had been in use for about two hundred years, and although improved in form,



Forsyth Pistol in Firing Position. An Idea of Size Can Be Gained by Comparison with the Shooter's Hand.

remained the same in principle. Fulminating compounds were not new. A William Pepy's famous diary, mentions the Fulminate of Gold under date of November 11, 1663.

Mr. Forsyth made some experiments for the British Government at the Tower of London in 1806 with the view of converting the existing flint lock small arms to his percussion system, but the powers that were failed to see that the reliable Brown Bess flint musket, could possibly



Forsyth Pistol, Hammer Down, Fulminate Magazine Out of the Way, and Trigger Concealed.

be improved. On April 11, 1807, letters patent were granted Mr. Forsyth for the detonating principle for exploding gun powder in fire arms.

The first arms produced under this patent seem to be a conversion of the flint lock. A plug or cylinder was screwed into the barrel or attached to the lock plate in place of the pan of the flint lock. On this plug rotated the magazine for the fulminating powder (which was fulminate of mercury). In shape it resembled a small scent bottle and held a considerable number of charges. The neck of the bottle carried a firing pin that was kept clear of the cylinder by a light spiral spring. The bottom of the bottle was the magazine and was filled through a small pivoted cover in the center of which was a hole stopped by a piece of cork or horn, to act as a safety valve, should the unlooked for happen, which it probably did at times. The plug had a hole drilled completely through it longitudinally, the outer end stopped by a screw that held the bottle in place. In the top of the plug in line with the firing pin was another hole or vent connecting the upper end of which was counter bored so that the firing pin would enter it when struck by the hammer. There was also a stop that prevented

the bottle making more than a half turn on the plug. To prime the piece, the bottle or magazine was turned upside down on the plug, the center bore of the vent was filled with fulminate and the bottle again turned upright, which was the firing position, the hammer striking the firing pin, brought about the discharge of the piece.

The little pocket pistol

at times termed the secret trigger, but referred to in an Encyclopedia of 1804, as the folding or safety trigger, as it will not catch in the pockets and cause the accidental discharge of the arm. The pistol is but a toy; its ballistics would hardly disturb a fellow with a heavy overcoat on at twenty paces, but the principle it demonstrated was a very great one as it made possible the perfect arms we have today.

QUESTIONS AND ANSWERS

The Rider Pistol

IHAVE been following the articles on Hand guns in hopes of learning something about a pistol which I have in my possession.

In as much as I have seen no reference to the likeness of my pistol I am taking the liberty of asking you to help me to obtain the history of this little hand gun.

On top of the barrel is stamped C. Remington & Sons, N. Y. Riders Patent Aug 15, 1871; it has a tubular magazine under the barrel; it shoots 32 extra short rim fire cartridges. The small projection at the top, which ends in a hook toward the rear, is the breech block, which, when depressed and pulled back, cocks the hammer and brings a cartridge up from the magazine to be fed into the chamber upon the return of the block to its original position thus leaving the arm ready to fire. A. M. R., Schenectady, N. Y.

The pistol you describe is known as the Rider's Magazine Pistol, and was made by E. Remington & Sons, Ilion, N. Y., prior to 1880.

It is chambered for the .32 extra short rimfire cartridge. The magazine, which is under the barrel, holds four cartridges, and these are fed into the chamber on a sort of double action movement, that is to say, when you pull back the hammer like projection which you will note on the top and center of the pistol, the fired cartridge is ejected on the rearward movement, and the fresh cartridge is fed into the chamber on the forward movement of the larger hammer which goes forward, but permits the actual hammer which fires the cartridge to remain in the position of being ready to fire.

You will no doubt wonder how any aim is taken with the extractor and loader in position. In the center of this is an aperture, about one-quarter inch ($\frac{1}{4}$) in diameter, through which aim is taken. The actual hammer being back in the firing position, of course does not interfere with the aim.

To load the pistol, the magazine tube which contains the magazine spring follower, is removed by simply pulling it forward, and the cartridges are dropped in and the magazine tube replaced, which action also compresses the spring.

The barrel is about three inches (3") in length and grooved.



Forsyth Pistol Hammer Cocked, Trigger Exposed and Fulminate Magazine Over Vent.

with a appreciable quantity of fulminate of Mercury close at hand, could hardly be classed as a pleasant job.

The pistol is marked on the barrel, Forsyth & Company, Patent London, and bears the London proof marks. The barrel is but two inches long, smooth bore, has a formed powder chamber and takes a round ball of 92 to the pound. A safety bolt locks the hammer at half cock, and the magazine covers the vent when the hammer is in this position. There is also a little swiveled ram-rod. The trigger is of the folding type;

Rifle Shooting In Schools

(Continued from page 8)

study the psychological reactions of his riflemen and seek to get out of them by appropriate means the best that wise handling will produce.

SPORTSMANSHIP

One of the most important phases of competitive shooting is sportsmanship. The displaying of the best of sportsmanship by an inexperienced rifleman is likely to be retarded by a narrowness of vision, due principally to his lack of experience, and he should therefore not be treated too harshly for a seemingly unsportsmanlike act, but should be reasoned with in an effort to make him see his act in the same light in which others view it.

It is usual for the beginner to think that unless he can win first place in a competition he has failed in his work. Consequently it is

petitor to take after his defeat is promptly, sincerely, and unreservedly to congratulate the winner, but to make an intelligent conscious effort to reason out just why the match was lost, and then to seek to eliminate the factors of defeat before the next competition.

It is a decidedly wrong attitude for a loser to regard the winner with suspicion just because he has bettered the loser's utmost effort, or has done remarkable shooting; it is far more sensible and pleasant for all concerned if suspicion be abandoned and the attitude be taken that any evidence of unfairness or bad sportsmanship should be accepted only with great unwillingness.

The winner is not without his problems in good sportsmanship; he is likely to regard the losers with a patronizing air unless he realizes distinctly that he is certain at times to find himself among the losers and unless he is conscious that the greatest enjoyment of the

can be done it is worth while. The National Rifle Association encourages such action and is ready to assist clubs contemplating it.

CONCLUSION

At the end of this little shooting manual it is desired to state that the material and the comments contained in it are not advanced as representing the ultimate in that part of the rifle shooting field which has been covered; it is hoped merely that a reasonable working basis for school and college clubs has been outlined, and that perhaps some new matter has been brought to the attention of those clubs which are already in an active and thriving condition.

Selling Rifle Shooting

(Continued from page 11)

If you cannot find anyone in the locality well-known politically or otherwise to the policemen to make this secondary talk, let the Secretary do it. There are mighty few things that will add more to the solidity of the club and will throw a bigger crimp into the plans of the anti's than to have the police solidly in back of you.

Last, but probably most important of all from the standpoint of the average sportsman is the ever-growing menace of anti-firearms legislation. Such legislation is due entirely to ignorance on the part of the public at large, and the only permanent cure is proper education of the law-makers and voters. The National Rifle Association and its affiliated clubs are the only organizations carrying the weight of the Government behind them in such an educational campaign. For that reason alone, every sportsman who would vote "No" to an anti-firearms law, who would resist any effort to prevent teaching Americans how to shoot, should throw his weight into the fight by supporting the local club.

The ushers will pass application blanks and pens around and every one who believes in the good fellowship of the great outdoors, the gospel of straight shooting, and the constitutional right of American citizens to bear arms, will sign up. The next shoot will take place Saturday with plenty of spare rifles and coaches for novices and special prizes for them.

Then "gently but firmly" before anyone has had an opportunity to feel that things are dragging, the "mixers" start pulling on coats and hats, starting the round of "Good Night, see you at the range Saturday," and clearing the hall.

Continue right along with the series of short articles on rifle shooting in the local newspaper. These should be run at odd days during the week when nothing else relative to the club activities appear. The week following the big meeting subjects such as these should prove both timely and interesting:

Choosing a .22 rifle.

First steps in marksmanship.

Daily training at home.

Placing the Law-Abiding at the mercy of the crook.

The value of Police Pistol Training.



Fig. 30—Low Sitting Position, from Left Side

necessary to make an effort to develop in him the idea that he has accomplished the most valuable success when he has intelligently exerted himself to the utmost, and has given the full powers of his energy and devotion to his preparations and performance. He must be made to realize that there are usually at the top of a list of competitors a number of individuals who have met this test of success, and that necessarily first place cannot be awarded to all of them, but only to some particular one who has slightly superior natural ability, who has been a bit more intelligently trained, or who seems to have the advantage of good fortune. And he must appreciate that these plus factors do not represent the real aims and enjoyment of competition, but that pleasant personal associations, and devotion in effort, are in themselves the greatest reward.

Every shooter may hope to perfect his marksmanship to a point where he will be always a feared competitor, but none is able to win without interruption against an entire large field of good shots. The young rifleman who is beginning a brilliant shooting career should on this account be cautioned against believing that he is likely to become absolutely unbeatable.

The most worthy attitude for a losing com-

sport is not bound up in the winning of matches, but comes from the maintenance of pleasant social relations among riflemen.

OUTDOOR SHOOTING

It is my purpose to say here very little about outdoor shooting. This purpose results from the fact that practically all the educational advantages of rifle shooting in general can be gained from indoor firing; because indoor shooting fits into the curriculum of school and college activities vastly better than does outdoor shooting; and because adequate outdoor shooting facilities within the vicinity of a school are often difficult to provide.

As a general thing it is advisable for the scholastic rifleman to defer his outdoor shooting until after his school days, when he may take it up through a senior civilian rifle club, or through the local Militia.

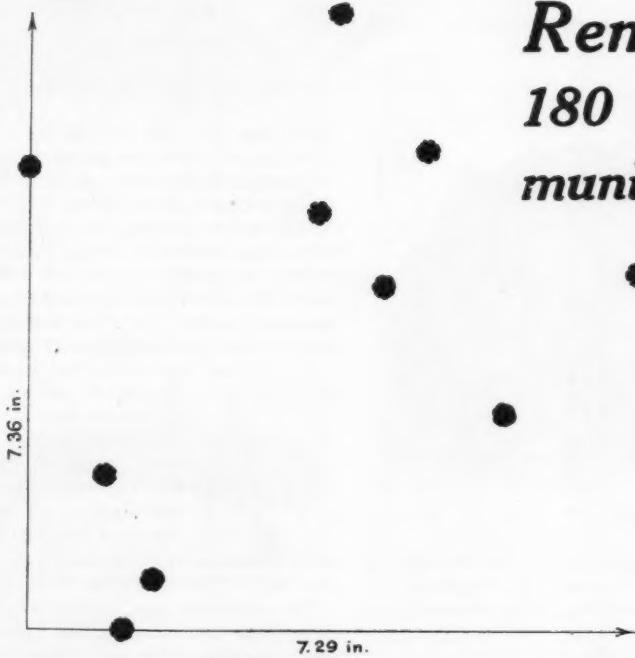
Outdoor shooting is of two general types: military shooting, with the high-powered military rifle, and long distance shooting (up to two hundred yards), with the cal. .22 rifle. It is conceivable that some school and college rifle clubs may be able to provide facilities for one or both of these kinds of shooting (a number have in fact done so), and where this



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*Remarkable and Uniform Accuracy
180 Grain International and 300 Meter Cartridges
munition The Outstanding Feature*

FINAL REPORT



ONE OF THE MANY FINE GROUPS MADE DURING THE 1000 YARD TEST WITH REMINGTON PALMA-OLYMPIC CARTRIDGES
MEAN RADIUS 2.99 INCHES

1000 YARD TEST

Mean Radius

1. Remington	-	-	-	5.497
2. Competitor A	-	-	-	5.823
3. Remington	-	-	-	6.034
4. Competitor B	-	-	-	6.319
5. Competitor B	-	-	-	6.627
6. Competitor A	-	-	-	6.962

THE Government Ammunition Test Board met at Aberdeen, Md., December 17th and 18th for the purpose of selecting the most accurate ammunition, as determined by actual test, for the use of the American International Rifle Teams which will participate in the Olympic Games and the International Rifle Association Competitions in Europe next June. After an exhaustive test of 30-60 Springfield cartridges at 300 yards under ideal conditions among the three competitors entered, Remington 180 Grain International 300 Meter Cartridges won first and second places respectively with the most remarkable and uniform accuracy ever recorded in the history of ammunition manufacturing or testing.

The conditions for testing ammunition at 1000 yards were not of the best for making small groups, the wind

The Remington Arms Company

Established 1816

The Authority in Firearms, Ammunition and Cutlery

gon Wins TON TEST

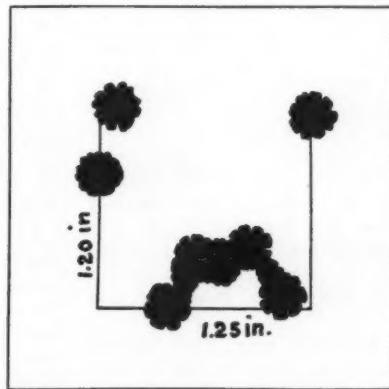
on Accuracy of Remington
200 Grain Palma-Olympic Am-
eare of Annual Government Test

RESULTS

300 YARD TEST

Figure of Merit

1. Remington 2	-	-	-	2.179
2. Remington 3	-	-	-	2.214
3. Competitor A	-	-	-	2.98
4. Competitor B	-	-	-	2.98
5. Competitor C	-	-	-	3.35
6. Competitor D	-	-	-	3.366



(300 YARD GROUP, ACTUAL SIZE)
THE SMALLEST GROUP MADE AT 300
YARDS DURING THE TEST. SHOT WITH
REMINGTON 300 METER INTERNATIONAL
MATCH CARTRIDGES.

varying in direction and velocity, but the average group diameters and the mean radius figures indicate that the Remington 200 Grain Flat Base Cupro Nickel Bullet is exceedingly accurate, outshooting all other competitors by a substantial margin.

Winning three out of four Annual Government Ammunition Tests is an achievement in the ammunition manufacturing field without parallel. The relation between Remington Ammunition and high, uniform accuracy and dependability is clearly established. Whether it is Remington Game Loads, Palma .22 Long Rifle or the Hi-Speed Game Cartridges the greatest care and attention to the essential details of manufacturing and maximum efficiency in their use are maintained throughout.

pany, Inc., New York City

Established 1816

Also Makers of Remington Cash Registers



Watching the Radius Shrink

(Continued from page 5)

an improvement which continued until the last shot was fired. The other Western lot showed a corresponding increase, as did the two Remington lots. These figures gave the contestants a different lineup behind first place still held by Remington No. 1 on an average mean radius of 6.0145; Western 52 second, 6.185 inches, Remington No. 2, third, 6.301 inches. "Palma A" fourth, 6.3475 inches, "Palma B" fifth, 7.0255 inches, and Western 62, sixth, 7.505 inches.

For the sixth relay Western 52 recorded the smallest radius, 5.23 inches, with Remington No. 1 close to it with 5.445 inches, and Remington No. 2, 5.847 inches; Western 62, 6.022 inches; "Palma A," 6.832 inches, and "Palma B," 6.395 inches following in order. For the entire test, however, Remington No. 1 still led with 5.23 inches against Western 52 with 5.71 inches; Remington No. 1 with 6.07 inches, "Palma A" with 6.59 inches; "Palma B" with 6.71 inches, and Western 62 with 6.71 inches. In this relay Remington No. 2 bettered the 2.99 inch group made by Remington No. 1 with a ten-shot cluster which gave a mean radius of 2.90 inches. This, however, was a freak group, having a horizontal of only 5.50 inches with a vertical of 8.92 inches and an extreme spread of 10.19 inches.

In the last relay Western 52 continued strong, scoring the very small relay mean radius of 4.57 inches, which was the smallest recorded up to that time, but a few minutes later Remington No. 1 put on a 4.50 inch group while both the Frankford lots printed better than in any other relay, "Palma B" measuring 5.54 inches and "Palma A" 5.74 inches.

The final rechecked mean radii showed Remington Lot No. 1 to be the winner; Western 52 second; Remington Lot No. 2, third; Frankford "Palma A," fourth; Frankford's "Palma B," fifth; and Western Lot 62, sixth.

* * *

WHILE there was a difference of less than one-third of an inch between the winner and second place at 1000 yards, the International test developed even a more exciting race, and in proportion to the range, the final figures were much closer—so close, in fact, that an immediate recheck of the targets of the two high competitors was ordered before the board declared the winner. The rechecked measurements gave Remington No. 2 an average mean radius for 30 targets of 2.192 inches, and Remington No. 3, 2.245 inches, little more than five one-hundredths of an inch difference. The official recheck while not changing the relative standing gave Remington No. 2 a winning rating of 2.179 inches and Remington No. 1 second place with 2.214 inches.

For reasons of expediency, the board decided that although the International Matches will be fired at 300 meters, the testing of ammunition for this event would be carried on

at 300 yards, which permitted the use of the regular target pits at this range. The thirty targets were shot in relays of five.

The performance of the two Red Ball lots in this test was all the more remarkable because of the generally excellent groups made by all competitors.

Western 52 and 62 started off with a figure of merit of 2.69 inches and 2.85 inches respectively and these, posted on the bulletin board in the measuring room indicated what the observers might expect. But the Remington Lots soon set even a smaller standard. Lot. No. 2 with the 180 grain bullet and HiVel printing five targets averaging 2.06 inches and including two groups one of which measured 1.89 inches and the other 1.91 inches. There followed a group by Remington No. 3 having a figure of merit of 2.17 inches including one target of 1.68 inches. The Frankford entries in the first relay showed for Lot "A I" a figure of merit of 3.65 and Lot "B I" 3.35 inches.

From then on keeping track of the standing of most of the contestants developed into a hair-splitting business. Some two years ago, it will be recalled, the ammunition board feared that difficulty would attend the measuring of 300 meter targets made at that time because of the likelihood of more than one shot going through the same hole. This possibility was not realized that year at Quantico, but it came perilously near being a fact at Aberdeen this year.

In the second relay the figure of merit for Remington No. 2 was 2.63 inches, a slight increase over the first relay. But Remington No. 3 showed a slight decrease, with 2.14 inches including another group rating a merit figure of 1.68 inches. Both of the Western lots showed slightly larger groups, as did Frankford Lot "A I," but Lot "B I" gained a bit. All of this operated to make the race more hotly contested and after the tenth target the standing, in round figures, showed: Remington No. 3 (1147 powder), 2.155 inches; Remington No. 2 (HiVel), 2.345; Western 52, 2.795 inches; Western 62, 3.075 inches; Frankford "B I," 3.20 inches, and "A I," 3.25 inches.

The third relay, which completed half of the test, and which was fired in the failing light of late afternoon, gave these figures of merit: Remington No. 3, 2.17 inches, with three groups under 2 inches; Remington No. 2, 2.38 inches, with two groups under 2 inches; Western 52, 2.80 inches; Western 62, 2.90 inches; Frankford "B I," 3.02 inches, and "A I," 3.48 inches.

Striking averages at the end of the first day's 300-yard firing showed this standing:

First, Remington Lot 3—

Figure of Merit	2.161 inches
Extreme Vertical	2.183 inches
Extreme Horizontal ...	2.137 inches
Extreme Spread	2.725 inches

Second, Remington Lot 2—

Figure of Merit	2.356 inches
Extreme Vertical	2.459 inches
Extreme Horizontal ...	2.247 inches
Extreme Spread	3.130 inches

Third, Western 52—

Figure of Merit	2.796 inches
Extreme Vertical	2.814 inches
Extreme Horizontal ...	2.775 inches
Extreme Spread	3.487 inches

Fourth, Western Lot 62—

Figure of Merit	3.019 inches
Extreme Vertical	2.989 inches
Extreme Horizontal ...	3.049 inches
Extreme Spread	3.803 inches

Fifth, Frankford "B I"—

Figure of Merit	3.174 inches
Extreme Vertical	3.319 inches
Extreme Horizontal ...	3.029 inches
Extreme Spread	3.960 inches

Sixth, Frankford "A I"—

Figure of Merit	3.325 inches
Extreme Vertical	3.353 inches
Extreme Horizontal ...	3.296 inches
Extreme Spread	4.167 inches

* * *

IF further evidence of the close grouping qualities of the 300 yard ammunition were needed, mute yet conclusive evidence was furnished the following morning when the truck load of pit operators on their way to the 1000 yard butts found the road blocked by the 12-inch trunk of a yellow locust tree. Investigation disclosed that one of the Mann barrels had been so trained on its 300 yard target as to center its fire on the tree some 600 yards from the firing point, cutting it through about six feet above ground.

In the fourth relay, Remington No. 2 and Frankford "A I" bettered their average, the Red Ball with a merit figure of 1.99 inches, including one group rating 1.52 and another 1.87 inches, and the government lot with 3.16 inches. Remington No. 3 recorded a figure of 2.33 inches, which displaced it from the lead; Western 52 measured 2.81, and Western 62, 3.07, while Frankford "B I" recorded 3.26 inches.

Having taken the lead on an average figure of merit of 2.173 for the first 20 targets, Remington No. 2 made its position more secure in the fifth relay with five targets with an average figure of 1.76 inches. Among these targets three measured 1.55, 1.64, and 1.68 inches respectively, and only one exceeded 2 inches. Remington No. 3, with an average of 2.63 inches, did not do so well, while Western 52, with 3.28 inches, and Western 62 with 3.14 inches, did not succeed in reducing their averages. The Frankford Arsenal groups in this relay ran 3.59 inches for lot "A I" and 3.72 inches for lot "B I."

With but five targets remaining, the contestants were rated in this order: Remington No. 2, 1.9665; Remington No. 3, 2.437; Western 52, 3.041; Western 62, 3.092; Frankford "A I," 3.416; and "B I," 3.468.

The final targets for the leader in the race went more than one-third of an inch over the average, making the final grand average figure for Remington No. 2, 2.192 inches.

Its closest rival, Remington No. 3, started out well with a 10 shot group measuring 1.68 inches, and following that with the most remarkable target produced during the test—ten shots with a figure of merit of 1.23 inches, the edges of each of which could be touched by a 50 cent piece centered on the target. But the three succeeding groups were not in the same class, shooting up the average for the target to 2.024 inches and giving this lot a grand average figure of merit of 2.245 inches which was good only for second place, Western 52 taking third place with 2.833 inches. The official recheck of the targets gave slightly different figures, but the same standing.

An outstanding fact in connection with both 1924 ammunition tests—and especially with the Olympic-International Tryout—is that there seems to be a steadily growing interest in the tryouts among high army officials. Among the many who attended the Aberdeen session of the Ammunition Board were Brig. Gen. J. W. Joyes, Assistant Chief of Ordnance, Col. John H. Rice, Ordnance Department, Retired, and Col. H. W. Schull of the Ordnance Department.

These members of the Ammunition Board attended the meeting: Brigadier General Collier L'H. Ruggles, Assistant Chief of Ordnance and Chairman of the board; Colonel C. E. Stodter, Cavalry; Colonel Fred M. Waterbury, New York National Guard; Major Littleton W. T. Waller, Jr., U. S. Marine Corps; Major William S. Fulton, Coast Artillery Corps; Major Glenn P. Wilhelm, Ordnance Department; Major Lee O. Wright, Ordnance Department; 1st Lieut. Grosvenor L. Wotkyns, Infantry; Mr. R. V. Reynolds; and Mr. K. K. V. Casey.

Among the representatives of Ammunition companies were: From Frankford Arsenal: Col. O. T. Horney, Maj. J. S. Hatcher, Capt. L. D. Lewis, Capt. "Andy" Hallowell, Frank Wilson, and the gun crew, consisting of Chas. S. Hogue, Sam Schnable, and George Schnerring.

From the Remington Arms Company: F. J. Kahrs, J. A. Dickerman, E. C. Hadley, and the gun crew, Capt. Chas. Van Amburg and J. H. Chesnall.

From the Western Cartridge Company: R. F. Riggs and S. Rousseau.

From the Ordnance Department: Capt. James Hatcher and J. C. Gray.

These observers were present: S. C. Lloyd, R. G. Woodbridge, and C. S. Groodyke of the DuPont Company; L. C. Weldin, H. N. Marsh, and C. S. Landis of Hercules; Maj. Townsend Whelen, U. S. A., M. L. Robinson of the Winchester Repeating Arms Company, and John M. Holzworth, one of the Camp Fire Club's big game hunters and business manager for Griffin and Howe.

The Troubles of a Gun Crank

By C. S. Pool

THE following is meant to be a complaint against the kind of service rendered the shooters of the country by the various companies serving said shooters. After reading the following lines you may think me an old grouch, but that would be misleading, because the boys I work with say I am the "goofiest guy" they ever saw.

About a year ago I, like many others decided that I wanted a Springfield sporter. The first thing I did was to send to the Director of Civilian Marksmanship for a specially selected and star gauged National Match rifle. After that my troubles began.

The next thing in line was a stock blank. I sent to one of the leading dealers in stock blanks and obtained a "fancy American walnut" blank, which upon arrival proved to be very poorly seasoned, in fact it shrank away from the sides of the butt plate about one sixteenth inch, this shrinkage took place during our dry California summer. Consequently this fall I had to refit the stock to the action and refinish it. I had good luck and made a good job of it.

Of course I had to have some different sights so I procured a No. 48 for a rear sight, this is a dandy and cannot be beat. For a front sight I sent to a prominent sight maker for an ivory bead. When it came it proved to be one eighth of an inch too high, although I had ordered it specifically for the model 1903 Springfield. I finally obtained a gold head of the right height. Next I wanted an aperture front sight for target shooting so I ordered a special hooded aperture front sight, for the 1903 Springfield. When it came it was so high that it was necessary to raise the No. 48 twelve minutes in order to make the bullets print in center of bull at one hundred yards. I wrote to the makers and asked them if they could make me a special base and they said they could. I sent the sight to them, telling them the difference in height of base to make, but by some slip in their shop or otherwise, they sent me a sight for the .22 Springfield. I tried it out and found that by lowering the No. 48 as low as possible, the bullets still printed three inches high at one hundred yards. So you see that while the first one was too high the next one was too low. I guess that I will have to make a base.

Then like all "bugs" I wanted to load my own cartridges, consequently I sent to a prominent loading tool maker for a set of tools. The bullet seater cut a ring around the ogive of the bullet, this caused by the seater being cut with a cherry that had a nick in it. I complained to the maker and they asked me to send them a sample of the bullet that I was using. This I did, first seating it in an empty case so it would show the mark from the bullet seater. This was about a year ago and I have not heard from them at this writing.

Next thing I needed was a full length resizing die. I ordered one from a firm that makes a specialty of furnishing shooters with various kinds of tools. When it arrived I tried it out and you should have seen me heaving on the vise handle to force the case in the die. After resizing one I "miked" it up and found that it

was only seventeen thousandths of an inch smaller, just back of the shoulder, than the standard Springfield chamber. The neck portion of the die was all right. I wrote to the maker and told them that it was useless to me in the condition it was in. They asked me to send it to them, which I did. They reamed it out and returned it to me, stating, that while it was not quite as large as the sample case that I had sent them, it would soon wear and be the right size. What do you think about that? That made me so mad that I said to — with them, I would make a die myself. I worked for about a day and a half to make a reamer the right size to ream out the die, but I finally got it the right size. It took four trials to get a die that would retain its size through the heat treatment, but at last I had a die that answered my purpose, one that was .438 inch at the shoulder, which makes them slip in the chamber nicely and .331 inch at the neck, which is just right—that is before the expanding plug is pushed through.

After all the trouble that I have had in obtaining material to convert my "as issued" into a sporter, I have at last got a rifle that looks fine and shoots just as close as I can hold, which is not close to be sure. A few days ago when lining up the aperture front sight, I made a group one and nine sixteenths inch in diameter. Six shots, all of the loads I had left after getting the sights set for line. 47 grains of No. 16 and the 170 grain flat base bullet.

In conclusion I wish to say that it certainly is discouraging to the ordinary shooter to receive the kind of service from the different dealers that I have received. The only thing—besides the No. 48 sight—that I ordered and received what I ordered was the rifle I bought from Uncle Sam.

* * *

The Perfect .22

(Concluded from page 2)

bring the weight of the pistol up to about $2\frac{3}{4}$ lbs, at least 1 lb too heavy and quite unusable off-hand by the average shooting man. Mr. Wurfflein's practice seems to have been to have one standard barrel which could be bored out to any caliber up to .44, and in that I have no doubt his pistols were of the right weight and balance, but in the .22 caliber the mass of barrel metal makes it intolerably muzzle heavy.

But there is no reason at all why anyone possessing a .22 Wurfflein should not have such improvements made to it as to bring it almost if not quite up to our standard of single shot perfection. Quite a lot of metal could be turned off the barrel and cut away from the frame without impairing its strength or safety. The hammer could be lightened up and the thumb spur altered so as to keep it always below the line of sight, and the flat mainspring replaced by an easy working coiled one.

Then if it were possible to design a kicking extractor to throw the fired shell clear of the chamber, a converted Wurfflein pistol, of about $1\frac{3}{4}$ lbs with its good grip, locking catch and trigger, light hammer, easy mainspring, low lying barrel and kicking extractor, should be the practical realization of the Perfect .22 Single Shot Pistol.

THE NRA NEWS

Conducted by C. B. Lister

STEP LIVELY OR YOU'LL GET RUN OVER

THREE has never been a season in the history of the N. R. A. when there has been as much activity definitely programmed in advance as the plans indicate for 1924. Most encouraging from the standpoint of the future development of the sport is the fact that the very foremost rank of the active promoters for the coming year has been taken by the college riflemen.

Three events have already been programmed in addition to the N. R. A. Intercollegiate Championship and R. O. T. C. National Intercollegiate Match. These events have been planned by the college riflemen, on their own initiative, and will be put over by them with the co-operation of, and under the sanction of, the N. R. A. The first event is an intercollegiate shoulder-to-shoulder match, representative of the Eastern Intercollegiate Gallery Championship, which will be fired in New York City on January 19, and will be participated in by Columbia, City College of New York, Georgetown University, George Washington University, Johns Hopkins, Lehigh, Massachusetts Institute of Technology, University of Pennsylvania, New York University, Yale, and Drexel. This is by far the most ambitious project that has been undertaken in college circles in the history of the game, and it speaks well for the impression that the sport has made in the past few years that the colleges are willing to defray the expenses of a rifle squad for a trip such as the one required to participate in this match.

Close on the heels of the shoulder-to-shoulder match in New York comes the schedule of the Northeastern Intercollegiate League. This league embraces Harvard, Yale, Princeton, Pennsylvania, Penn State, Dartmouth, Columbia, Norwich, Syracuse, and the Massachusetts Institute of Technology, ten of the strongest colleges in the East. The schedule has been so arranged that each college will shoot a match with every other college in the League in the same manner that a baseball league operates. It is, of course, too much to expect that the culminating matches in the League between the "big three," Yale, Princeton, and Harvard, and such other time-honored rivals as Pennsylvania and Penn State, will attract the public attention this year which the annual football competitions between these same schools arouse, nevertheless there is no question in the minds of the undergraduate riflemen at these schools but that the league system of matches, with definite dates fixed in advance, will arouse a great deal more interest on the campus than the customary form of national postal matches.

The third event which is already on the books for the college shooters is the Eastern Intercollegiate Championship with the service rifle, which

will be fired over the U. S. Naval Academy Range at Annapolis, Maryland, in May. It is still too early to have received definite advice from the various interested colleges as to what teams may be expected to participate. Last year, six colleges fired, and it is certain that this number will be increased when the teams line up on the range at Annapolis in May.

The college riflemen have pointed the way in two directions: first, they have indicated that it is possible to undertake programs which appear to the average sophisticated rifleman as over-ambitious; they have proven that it is possible to undertake such programs and put them over if their efforts are co-ordinated with the activities of the N. R. A., and if the weight that that organization is able to throw into the scales is brought to bear to help them; and they have proven that the N. R. A. is open to suggestion and anxious to co-operate with its affiliated organizations whenever they have ideas to advance which their close contact with conditions in the field indicate will stimulate interest in the game.

When colleges take hold of anything, the newspapers as a matter of course, give their activities space. With these three projects already under way and others in the making, it is an assured fact that college rifle shooting will receive many times the publicity this year that it has received before, and there is an unwritten challenge to civilian riflemen at large from the collegians, "Step lively or you'll get run over."

* * *

LOOK OUT FOR PENNSYLVANIA

MAJOR WILLIAM P. CLARKE has already started his campaign for the organization of a Pennsylvania civilian team to represent that state at the National Matches in 1924. During the Gallery season, civilian clubs are in many instances much more easy to reach than during the outdoor season, when the club members are inclined to scatter a bit, so that Major Clarke has the right idea when he plans to start his activities looking toward a winning 1924 combination right now. Other state organizations who want to get busy on their 1924 plans may obtain the latest lists of affiliated clubs from headquarters any time they request them. It is a little too early to get up-to-date lists of the individual members, as re-affiliations are not nearly completed yet.

* * *

CUBANS KEEN ON THE SHOOTING GAME

Captain Alberto Gandia, General Staff of the Cuban Army, who will be remembered by many of the riflemen who were at Camp Perry in 1920, has just concluded a visit in the United States which he made in the interest of rifle practice in

the Cuban Army and among the thirty odd rifle clubs in Cuba.

Captain Gandia, who is in charge of rifle practice in the Cuban Army, was interviewed by our correspondent just prior to his return to Havana and learned that there is great interest in Cuba in rifle practice especially in small-bore rifle shooting which is now going on in the Islands as a result of the successful small-bore competitions in the United States.

Captain Gandia states that it is planned to hold a miniature Camp Perry in Cuba next May which will include small-bore and big bore shooting competitions based on the matches at Camp Perry, and it is also planned to organize an association of rifle clubs with jurisdiction over the clubs similar to our own N. R. A.

* * *

INDUSTRIAL RIFLE CLUBS

There are not as many industrial rifle clubs in existence as there should be. That statement, of course, does not help to organize any new ones, but the following extract from the "Welder," the monthly house-organ of Spang-Chalfant & Company, Etna, Pennsylvania, may give some employees of industrial plants an idea as to what one such club is accomplishing:

NOTICE!

To All Employees of Spang, Chalfant & Co., Inc.

The Spang-Chalfant Rifle Club is an organization of the employees of this company for the sport of rifle shooting. Any employee over 18 years of age can apply for membership. This is a sport in which every one can participate and can always get enjoyment.

We believe that there is a large number of employees who would like to join the rifle club, and now is your chance. Come to the club-room any Tuesday, Thursday or Saturday night, the rear end of the old Machine Shop, second floor. You will always find some one there to greet you. See any member of the club for application blanks. The dues are \$1.00 a year.

October 22nd was a red letter day in the Rifle Club's calendar. Twenty-one Number 52 Winchester Bolt Action guns were distributed to the members who had ordered them. This is one of the highest grade guns that can be bought, and the scores that have been in use show it. Shooters who were turning in 80 to 90 scores, are turning in 90 to 98 scores, and are not as yet fully acquainted with their guns.

The Club wishes to take this opportunity to thank Mr. W. J. Hampton for his assistance in procuring these rifles.

Friday night, October 26th, about thirty members of the Men's Bible Class, of the United Presbyterian Church, visited the range. A match between a team of the Bible Class and the club resulted as follows:

U. P. B. C.	S. C.
Wm. Ruehl 97	Kietz 98
J. Edmonds 94	Sweadner 97
Wm. Ritts 92	O'Donovan 96
A. Grobe 91	Duderstadt 95
L. E. Logan 90	Eisenreich 93

In a match between two teams of all the club members on Thursday, November 8th, thirteen out of twenty-eight shooting that night, turned in scores of 90 or better. Eight of these were 95 or better.

This shows what can be done if you will get out and practice. There is no excuse now. You have the guns and the best range in the state; so get busy.

Mr. Virgil Richards, of the Winchester Arms Co., and Mr. Lewis Latenslager, of the Sportsman Supply Co., Pittsburgh, were visitors at the club house Monday evening, October 22nd, 1923.

Particular attention of all clubs is invited to the third paragraph and the fifth paragraph in the above notice. When twenty-one members of a club invest in a high grade piece of artillery such as the Model 52 Winchester, it indicates real interest. And it is certainly a better plan to arrange to have such a number of guns ordered and delivered at the same time rather than have them drift in over a period of two or three weeks. The Winchester Company thought enough of the incident to have Virgil Richard pay the club a visit on that occasion. And it is a well-known fact that whenever either of the shooting members of the Richard family pays a visit to a rifle club, there is something doing both from the shooting and social standpoints.

As to the fifth paragraph, how many clubs have thought of taking the shooting game up with the Bible Class organizations in their locality? The shooting game is non-sectarian, and the introduction of a Men's Bible Class to the club rifle range does not have to be made a sectarian matter. But such organizations in many localities are exceptionally active and aggressive groups, numbering in their membership some of the best known business men of the community. Such an occasion will almost invariably mean a return visit for the club, which will be another social occasion, and will, if properly handled, result in the installation of a range in the church basement where the Boy Scouts, Girl Scouts, and Men's organizations may be taught the gospel of straight shooting without in any way interfering with such other gospel as they may be learning upstairs.

* * *

CHICAGO RIFLE ASSOCIATION READY FOR BUSINESS

The annual meeting of the Chicago rifle Association was held on December 18th, and Major F. W. Parker, Jr., a director of the N. R. A., was elected President. T. G. Lively, well known to national match riflemen particularly as leader of the 1922 Illinois civilian team, was elected Vice-President. C. W. Smith was made Executive Officer for 1924, and T. L. Albee was elected Treasurer. The two last named were members of the Illinois civilian team which made such a splendid showing in the matches at Perry this year. The Chicago Rifle Association is one of the most active and progressive rifle organizations in the country, embracing practically all the rifle clubs in the city of Chicago. With the elections out of the way, they are all set for a history making year.

Shot With A Fifty-seven or The Fermented Chili Sauce

A MYSTERY STORY IN ELEVEN VOLUMES

BY C. C. FINN

VOL. 1

THE MYSTERY is why in warfare a soldier should never be attacked at 200 yards where he would not have time to assume the kneeling or sitting position, adjust his sling, skuffle his heels to make a good foot-hold, and

Vol. 2

MORE MYSTERIOUS why is it assumed that anyone is never to be called on to fire more than one, consecutive, rapid-fire shot from the standing position?

Vol. 3

NO ONE KNOWS the answer to this but we are driven to find out because so many bum hunters belong to this club and take more than one shot at a grizzly. Some one left a copy of Towny Whelen's book out in the woods and the grizzlies wont navigate land suitable for proper military positions any more

Vol. 4

FORCING OUR POOR SHOOTERS to shoot both off hand and rapid.

Vol. 5

THE SENTRY match is the answer to this. Some unfortunate shooter will soon be seen on our range, walking sentry beat between pegs in the ground, rifle loaded and locked and carried in any position. He will be 200 yards from the targets and as he walks his lonely beat in the darkness of the afternoon with no sound but the cruel joshing of the gang he

Vol. 6

IS ATTACKED by a series of targets which appear from the butts and in front of them, singly or in various combinations. Any target or combination of targets will be known as an "exposure" and the sentry will

Vol. 7

BE EXPOSED fifteen times in two minutes. The Sentry must shoot off hand, can shoot as many shots as he wants to, can shoot into the ground, jam his clip, drop his belt and have a good time. The targets will be E targets or similar ones, displayed by means of staves or operated by ropes and some

Vol. 8

COLD BLOODED SCOUNDREL will be stationed in the pit to devise combinations of exposure to chill the blood of the shooter. If it is thought that shooting at man targets is

Vol. 9

TOO CRUEL and tends to making shooters wicked and merciless the man targets can be replaced by Grizzly Bears, Spotted Fauns, Buffalo, Mountain Goat, Whelens, Crossmans, Pole Cats, and other flora and fauna including the Amphibious, Bi-horned Volupus of the far-far South.

Vol. 10

WHY NOT make one match difficult enough to make the possible worth while and why not shoot rapid, off-hand?

Vol. 11

WATINELL has this got to do with the title of the story? Isn't it a PEACH of a title? and its thrown in absolutely free. Imagine Chili sauce as good as it is, made better by being anti-Volsteaded?

FOURTH OF JULY BORE SHOOT FOR CHICAGO

The Chicago Rifle Association has officially put its stamp of approval on the proposed Fourth of July tournament for Chicago, and will lend all its energies in assisting the Illinois State Rifle Association and the other organizations in bordering states to make the small bore tournament an event which will make a worthy running mate for the later Sea Girt tournament. No more appropriate method of celebrating the "Fourth" has been devised than in the shape of a shooting match. And it is to be hoped that within the next few years these Fourth of July regional championships may become established nation-wide events. They have the sanction of the N. R. A., and the parent body issues appropriate decorations in the N. R. A. individual and N. R. A. team zone championships.

THE NAVY GETS INTO THE SCRAP

Last year, for the first time, the Army actively entered the gallery shooting game via the military championships, which were added to the regular N. R. A. gallery program. This year when the program was published, the Marine Corps asked for a quantity of booklets, and the leathernecks have purchased a number of .22 Springfields, and will compete in the military championships, in addition to doing a great deal of inter-company and inter-regimental work with the .22 while the fleet is on the southern maneuvers. Now comes word from the U. S. S. Bridgeport that they expect to affiliate a club from the ship with the N. R. A., and to enter teams or individuals in individual or team matches, provided weather conditions do not render it impossible to shoot while the ship is en route South. Lieutenant Commander E. E. Wilson, the popular Adjutant of the 1922 and 1923 International Free Rifle Teams, is on board the Bridgeport and has as his able assistant in propagating the rifle shooting bug among the sailors, Chief Machinist's Mate J. B. Smith, who is well-known around headquarters of the Association. Appearances are that the Bridgeport will be heard from.

ILLINOIS ENTERS THE INTER-COLLEGiate FIELD

Colonel W. T. Merry, newly appointed Professor of Military Science and Tactics at the University of Illinois is in every sense a rifleman, and he has taken hold of rifle training at the University with a zest which promises to place this institution at the head of the intercollegiate list. There are thirty-six targets in operation in the gallery at the University of Illinois. It is planned to add at least twelve more immediately. Colonel Merry writes that this will still leave matters pretty well congested, but he hopes to get along. This is just an indication of what can be done with the shooting game in universities if the undergraduates are furnished the facilities to give vent to their natural enthusiasm for the rifled tube. Colonel Merry also hopes to be able to secure the funds to purchase a number of the new model 1922 Springfields. It is to be hoped that every civilian rifleman in the vicinity of Champaign will do whatever he can to co-operate with Colonel Merry in his work, and that any members of the Association who have sons in training at the University will see that they look up the P. M. S. & T. and make a place for themselves on the rifle squad.

N. R. A. Individual Gallery Match Scores

THERE is no phase of the N. R. A.'s activities that has met with greater success than the small bore matches. This year will see the largest number of competitors entered in the gallery rifle and pistol competitions. This shows a splendid effort on the part of the rifle clubs and individuals affiliated with the N. R. A. Small bore shooting has certainly arrived as a National Sport.

In the beginners matches some excellent scores were fired. The 50 foot match was won by H. N. Renshaw of Nogales, Arizona with a score of 578. Two of his home competitors won second and third places.

The 75 foot match was won by R. M. Kelley of Pasadena, Calif., with a score of 578. W. P. Shwatek and L. W. Durrell both of Ames, Iowa, were second and third respectively. Those scores were within a few points of the winner.

The individual standing matches always create plenty of interest. That man Liston of Johnstown, Pa. is surely a whale of an offhand shot. You have heard the story of the man who would not eat a squirrel unless he shot it in the eye. Well brother Liston could get away with it. The best part of his offhand shooting is that he is consistent in retaining a high score. Walter Stokes wins second place having outranked tied score of J. P. Frost of Massillon, Ohio and J. C. Greenway of Walla Walla, Washington. Did you ever fire on an accordian bulls eye? If not just enter the 75 foot standing match. Another 384 but at a longer range! H. M. Thomas did this and he should be given credit for a very phenomenal score. Following Thomas very closely are J. Kaufman and F. E. Border.

The scores in the sitting matches were high. Stokes winner of the 50 foot match and Mooney winner of the 75 foot match turned in scores that were nearly perfect. Aside from winning his match Mooney carried two of his team mates with him in second and third places.

Match No. 1

Beginners' Individual 50 Feet

1. H. N. Renshaw, Nogales, Ariz.	578
2. H. R. Renshaw, Nogales, Ariz.	566
3. C. C. Cheshire, Nogales, Ariz.	565
4. E. C. Gustafson, Cleveland, Ohio	556
5. E. R. Page, Norman, Oklahoma	546
6. J. F. Woolshalter, Castorland, N. Y.	542
7. C. R. Burdette, Baltimore, Md.	541
8. C. C. Berkley, Newport News, Va.	520
9. John Laug, Picua, Ohio	519
10. F. C. Tamayo, Picua, Ohio	509
11. W. E. Elcock, Newport News, Va.	507
12. W. Upton, Newport News, Va.	506

Match No. 2

Beginners' Individual 75 Feet

1. R. M. Kelley, Pasadena, Calif.	578
2. W. P. Shwatek, Ames, Iowa	575
3. L. W. Durrell, Ames, Iowa	568
4. J. S. Palmore, Cristobal, C. Z.	564
5. C. R. Fleming, Ensley, Ala.	560
6. W. D. Smith Jr., Birmingham, Ala.	560
7. W. F. Jacobs, Harlowton, Mont.	556
8. A. M. Freeland, Chicago, Ill.	551
9. J. M. Sorensen, Perth Amboy, N. J.	547
10. H. Pagett, Wilmington, Ohio	546
11. M. L. Bonta, Wilmington, Ohio	538
12. C. V. McCoy, N. Y. C.	520
13. W. Weston, N. Y. C.	503
14. E. K. Leighton, Cristobal, C. Z.	501
15. R. B. Greig, Oak Park, Ill.	492
16. H. F. Stevenson, Cristobal, C. Z.	453
17. H. C. Wagner, N. Y. C.	264

Match No. 3

Individual Standing 50 Feet

1. Curtis Liston, Johnston, Penna.	384
2. W. R. Stokes, Washington, D. C.	376
3. J. E. Faust, Massillon, Ohio	376
4. J. C. Greenway, Walla Walla, Wash.	376
5. N. G. Ribble, Iowa City, Iowa	374

Match No. 4

Individual Standing 75 Feet

6. E. R. Hull, Wisconsin	374
7. S. R. Hinds, Ft. Snelling, Minn.	370
8. B. T. Strickland, Massillon, Ohio	367
9. W. L. Bruce, Cheyenne, Wyo.	366
10. L. E. Klein, Massillon, Ohio	364
11. R. Devereaux, N. Y. C.	363
12. F. A. Williams, Dayton, Ohio	350
13. E. D. Hooe, Columbus, Ohio	347
14. W. M. Affelder Jr., N. Y. C.	343
15. D. Wyandt, Massillon, Ohio	343
16. C. N. Feil, Massillon, Ohio	340
17. C. D. Wild, Janesville, Iowa	336
18. R. J. Hart, Janesville, Wis.	325
19. E. Schwegler, Janesville, Wis.	324
20. G. H. Woodworth, Troy, Penna.	317
21. E. B. Loofboro, Janesville, Wis.	310
22. C. C. Berkeley, Newport News, Va.	269
23. W. Upton, Newport News, Va.	256
24. B. A. Fleming, Kansas City, Mo.	248
25. W. Weston, N. Y. C.	195

Match No. 5

Individual Sitting 50 Feet

1. H. M. Thomas, New Haven, Conn.	384
2. J. Kaufman, Jewett City, Conn.	381
3. F. E. Border, West Bend, Iowa	380
4. E. Montag, West Bend, Iowa	380
5. D. Ballou, Jewett City, Conn.	375
6. T. K. Lee, Birmingham, Ala.	374
7. O. H. Maberry, West Bend, Iowa	373
8. A. J. Huebner, Chicago, Ill.	372
9. F. J. Valgenti, Philadelphia, Pa.	368
10. C. B. Palmer, Jewett City, Conn.	368
11. L. W. Somers, Bangor, Me.	367
12. R. C. Stokes, Washington, D. C.	367
13. C. W. Randall, Alameda, Calif.	366
14. F. C. Payne, Los Angeles, Calif.	363
15. A. L. Stebbins, Jewett City, Conn.	361
16. E. N. Moor Jr., San Francisco, Calif.	359
17. S. D. Monahan, Chicago, Ill.	355
18. P. T. Clapp, Brattleboro, Vt.	355
19. C. E. Stodter, Washington, D. C.	354
20. F. Johansen, Joliet, Ill.	351
21. A. K. Friedrich, Ames, Iowa	351
22. L. R. Jeffery, Philadelphia, Pa.	342
23. R. M. Kelly, Pasadena, Calif.	339
24. M. C. Frincke, Berkeley, Calif.	331
25. A. B. Sprague, Worcester, Mass.	331
26. W. L. Darling, Boston, Mass.	327
27. A. C. Van Der Bent, Philadelphia, Pa.	326
28. A. B. Jordan, Brattleboro, Vt.	326
29. F. W. Parker Jr., Chicago, Ill.	321
30. J. O. Norcross, Shrewsbury, Mass.	311
31. F. C. Kimmel, St. Louis, Mo.	303
32. W. Mott, Chicago, Ill.	301
33. W. S. Gibbons, Boston, Mass.	290
34. G. Scott, Audubon, N. J.	282

Match No. 6

Individual Sitting 75 Feet

1. W. R. Stokes, Washington, D. C.	398
2. F. D. Gibson, Iowa City, Iowa	397
3. M. C. Burt, Thermopolis, Wyo.	397
4. H. K. Mann, St. Slocum, N. Y.	395
5. S. R. Hinds, Ft. Snelling, Minn.	394
6. Dr. E. Schwegler, Janesville, Wis.	392
7. N. G. Ribble, Iowa City, Iowa	392
8. W. L. Bruce, Cheyenne, Wyo.	390
9. L. D. Vaughn, Thermopolis, Wyo.	390
10. W. H. Burt, Thermopolis, Wyo.	390
11. W. M. Affelder Jr., N. Y. C.	387
12. E. B. Loofboro, Janesville, Wis.	387
13. R. C. Bender, State College, Penna.	385
14. G. J. Woodworth, Troy, Penna.	385
15. F. A. Williams, Dayton, Ohio	382
16. R. A. Devereux, N. Y. C.	382
17. R. J. Hart, Janesville, Wis.	381
18. E. S. Hooe, Columbus, Ohio	379
19. C. D. Wild, Janesville, Iowa	374
20. C. R. Burdette, Baltimore, Md.	374
21. W. Upton, Newport News, Va.	371
22. J. C. Greenway, Walla Walla, Wash.	370
23. P. Coderre, New Bedford, Mass.	367
24. F. E. Hanson, Cheyenne, Wyo.	366
25. C. C. Berkeley, Newport News, Va.	363
26. E. W. Pape, New Britain, Conn.	362
27. W. Weston, N. Y. C.	336

Match No. 6 Individual Sitting 75 Feet

1. J. R. Mooney, Chicago, Ill.	397
2. C. G. Harrel, Chicago, Ill.	396
3. A. J. Huebner, Chicago, Ill.	395
4. H. M. Thomas, New Haven, Conn.	394
5. T. K. Lee, Birmingham, Ala.	394
6. A. K. Friedrich, Ames, Iowa	393
7. F. C. Kimmel, St. Louis, Mo.	393
8. F. Hogan, Salt Lake City, Utah	393
9. L. J. Corsa, N. Y. C.	393
10. F. E. Border, West Bend, Iowa	392
11. A. B. Sprague, Worcester, Mass.	392
12. G. L. Cutting, Worcester, Mass.	392
13. C. W. Randall, Alameda, Calif.	392
14. A. Atherton, Chicago, Ill.	391
15. H. E. Brill, Tulsa, Oklahoma	391
16. H. O. Waters, Salt Lake City, Utah	391
17. L. R. Jeffrey, Philadelphia, Pa.	390
18. F. C. Payne, Los Angeles, Calif.	390
19. C. E. Stodter, Washington, D. C.	390
20. L. W. Somers, Bangor, Maine	389
21. A. C. Van Der Bent, Philadelphia, Pa.	388
22. S. D. Monahan, Chicago, Ill.	388
23. A. B. Jordan, Brattleboro, Vt.	388
24. P. T. Clapp, Brattleboro, Vt.	387
25. E. N. Moor Jr., San Francisco, Calif.	387
26. R. M. Kelley, Pasadena, Calif.	387
27. J. V. McKelvey, Ames, Iowa	386
28. H. A. Weymouth, Salt Lake City, Utah	381
29. M. R. Boggs, Cristobal, C. Z.	380
30. O. H. Maberry, West Bend, Iowa	378
31. F. Johansen, Joliet, Ill.	377
32. E. Montag, West Bend, Iowa	375
33. J. O. Norcross, Shrewsbury, Mass.	372
34. W. L. Darling, Boston, Mass.	364
35. M. C. Frincke Jr., Berkeley, Calif.	363
36. F. W. Parker Jr., Chicago, Ill.	363
37. W. S. Gibbons, Boston, Mass.	362
38. W. Mott, Chicago, Ill.	346
39. G. Scott, Audubon, N. J.	338

Note: The above scores while official are subject to change until Feb. 1st, 1924. Complaints must be in the N. R. A. office by that date.

NEW HAVEN HAS CHURCH RIFLE LEAGUE

Under the heading of the Spang-Chalfant Rifle Club's doings, we made some mention of the possibility of introducing rifle shooting into the churches. Since writing that, there has been received a copy of the December number of the W. J. R. C. News, which gives considerable prominence to a church rifle league which was successfully put across in New Haven this year. There were eight churches in the New Haven league, and the trophy was won by the Trinity Methodist Church. At the wind-up of the season, a banquet was given the various rifle squads as is the custom with various other church athletic leagues, and an appropriate trophy was presented to the Captain of the Trinity Church Team. The following facts were advanced as the basis on which the league was organized: first, the older boys of the churches have an opportunity to become acquainted; second, the sport is of such a nature that it does not require only the biggest boys in the church; third, it keeps the boys interested in church activities; and fourth, it is a sport that is clean and character developing. Of course, there are many churches throughout the country where the very thought of a rifle range would be received with cries of anguish, but the churches generally are coming to realize that in order to interest the youngsters they must be given something to do which is interesting to them, and no one, regardless of his religious training, will deny the fact that the one thing that interests the American boy most is a rifle.



Conducted by

Col. C. E. Stodter

The Annual Return

THE time has arrived when rifle clubs and schools having in their possession government property received through this office are required to send in their annual return or statement of property on hand. All persons or organizations responsible for government property are required to keep records of the receipt and disposition of such property. Blank forms for use in making these annual returns are sent out to rifle clubs from this office and in order to make it as easy as possible for the club we enter some of the figures on these returns and ask the club to complete them.

In spite of all the assistance we can give to rifle clubs in this respect many of the clubs fail to make out these returns properly and some of them fail to send in any returns at all. This results in a large volume of correspondence, sometimes extending over a period from six months to a year. In view of the fact that the clerical force of this office is limited by the appropriations made by Congress, this extra work is simply added to the regular work done by the clerks and results in not being able to give as good service to rifle clubs as we could if all the clubs made out their returns correctly and sent them in promptly. If the club secretaries have kept all the shipping tickets sent them by the arsenals during the year, it should not require more than twenty minutes to make out the annual return.

In the first place the club officer making out the return should carefully read the instructions on the back of the form and should then start to fill in the face of the return. First thing to enter is the name of the rifle club and then the year. The form consists of two columns giving the names of the various articles that are ordinarily issued to rifle clubs or to schools. Column No. 1, heading "On hand from last return" should be filled out by copying the articles shown in column 5 of the previous year's return. The next thing to do is to look over all the shipping tickets covering property received during the year and make a list of these and from this list fill in column 2, then take the shipping tickets covering supplies which have been forwarded to arsenals or transferred or otherwise disposed of and enter the total of these opposite the proper heading in column 3. Under column 4 should be entered all articles expended by the club during the year in target practice. The list of supplies that may be expended are given in the list headed b, Annual Issue, paragraph 5 of Special Regulations No. 106. This includes ammunition, practice targets, spotters, pasters and target cloth. All of such supplies that have been used during the year should be entered under the heading "Expend," column

4. The articles listed under a, Initial Issue, paragraph 5, Special Regulations No. 106, cannot be expended and can be taken off the return only by returning them to an arsenal or by purchase.

Having filled in column 1, 2, 3, and 4, add the supplies in columns 1 and 2 and from these amounts subtract the articles listed in columns 3 and 4. This leaves the balance on hand which should be entered in column 5. The certificate at the bottom of the form should be filled in completely, signed by both the secretary and the president of the rifle club, and one copy sent to the Director of Civilian Marksmanship, 1115 Woodward Building, Washington, D. C. The other copy should be kept with the other records of the club, all of which should be carefully filed.

If a club finds it necessary to disband during the year, steps should be taken at once to properly dispose of the government property on hand. This office should be notified and shipping instructions will be furnished for the proper disposition of the property. It frequently happens that rifle clubs disband and some of the members go away, possibly including the club officer, who has charge of the property. The club fails to make the annual return, and after considerable correspondence it is discovered that no one knows what has become of the property. It sometimes happens that when the property is finally found it is in a damaged condition due to improper care, and the club is required to pay considerable sums for the necessary repairs. When the club is no longer in existence the principal of the bond must be held for the value of the property or the cost of the necessary repairs. A large amount of correspondence is necessary to close out the accounts of clubs that have disbanded without disposing of the property, or without notifying this office.

If a club elects new officers, the officer in charge of the property should transfer it to the new one by making out a list of the property on the shipping tickets furnished by this office and secure a receipt from the new officer for this property. One copy of this receipt should be forwarded to this office. This office should also be informed of the change of address of the club officers and of the election of new officers. It appears that some of the club officers who are principal on the bond furnished by the club do not fully realize their responsibilities to the government under the bond. A number of cases have occurred recently in which the principal of the bond has been required to pay considerable sums on account of the failure of the club to take proper care of the property issued to it.

Whenever a club transfers any property to an arsenal it is carefully inspected by the arsenal,

and if it appears that the property has been damaged on account of carelessness or neglect, the club is required to pay the cost of the necessary repairs, and in cases where the clubs have disbanded and the members have become scattered, it is necessary for the principal to make this payment.* He should, therefore, be especially careful to see that the club takes proper care of its supplies and that if it becomes necessary to return such supplies that they be properly packed for shipment.

* * *

Owing to the numerous complaints received regarding the quality of the .22 caliber ammunition issued to rifle clubs, the Ordnance Department made tests to determine the serviceability of this ammunition and has announced that all the ammunition on hand is unserviceable. Arrangements are being made for a new supply of ammunition, but this new supply will probably not be available for issue within the next two months. It will, therefore, be necessary for the rifle clubs to purchase their ammunition for use on the indoor ranges. Owing to the fact that one brand of ammunition does not shoot equally well in all rifles, it is generally more satisfactory for the men who desire to do the best possible work in the gallery to ascertain which brand of ammunition shoots best in his particular rifle and to purchase this ammunition in such quantities as will insure his having a fresh supply on hand at the beginning of the indoor season. A new supply of .22 caliber Winchester single shot rifles has been purchased and should be available for issue within a few weeks.

* * *

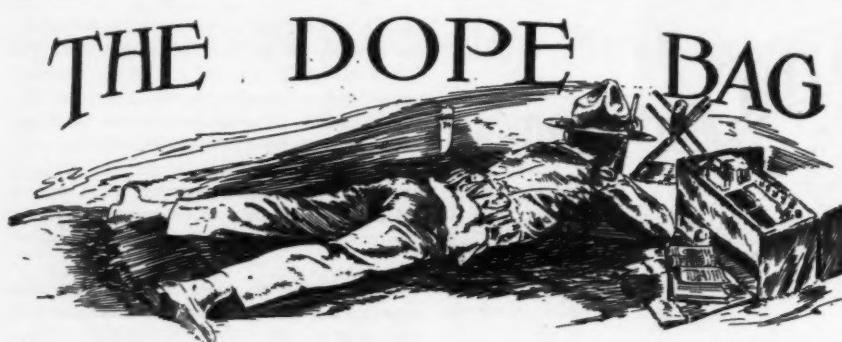
Several inquiries have been received as to the possibility of rechambering the Russian rifle to use either the .30 caliber 1906 cartridge or the Krag cartridge. Owing to the fact that the body of the Russian cartridge is larger in diameter than either the '06 or the Krag cartridge, it will be necessary to cut off the barrel slightly in order to rechamber and then refit the barrel. It will also be necessary to make some changes in the extractor and the rifle would have to be used as a single loader, as neither of these cartridges would work through the magazine. It would be more satisfactory to procure a supply of the unserviceable ammunition now on hand and use the cartridge cases for reloading with fresh powder and primers.

* * *

This office has been recently notified that the change in price of pistol ammunition, as reported in the November 15th issue of "The American Rifleman," is not intended to apply to the ammunition now on hand, which will continue to be sold at the old price of \$29.00 per case of 2,000. All purchasers of pistol ammunition who have sent in remittances covering the increased cost will have the additional remittance refunded.

* * *

The entire supply of 1922 National Match ammunition has been exhausted. This office has recently secured a small supply of 1923 National Match ammunition for sale to members of the National Rifle Association at \$3.00 per bandolier of sixty (60) rounds or \$60.00 per case of twelve hundred (1200). Arrangements are being made for the manufacture of a supply of 1924 National Match ammunition but it will be several months before this ammunition will be available.



A FREE SERVICE TO TARGET, BIG GAME AND FIELD SHOTS ALL QUESTIONS BEING ANSWERED DIRECTLY BY MAIL

Rifles and Big Game Hunting: Major Townsend Whelen

Pistols and Revolvers: Major J. S. Hatcher

Shotguns and Field Shooting: Capt. Charles Askins

Every care is used in collecting data for questions submitted, but no responsibility is assumed for any accidents which may occur.

Barrel Length, Velocity and Killing Power

By Townsend Whelen

PERHAPS there is no problem which arises more frequently in the remodeling of rifles than the relation which barrel length bears to velocity. Also, in connection with game rifles, the question of killing power of various loads confronts the hunter.

A typical series of questions upon these very important and interesting subjects have come from C. J. Johnston, of Montreal, who says

With reference to reduction in muzzle velocity when a rifle barrel is shortened, Mr. Chas. Newton gives this as $37\frac{1}{2}$ f. s. for every inch. Mr. W. C. Motley, in *Rod and Gun*, in Canada, for February, 1922, page 818, has a sliding scale which seems to be scientifically figured out. He gives the following figures for the .30-96, 24 inch barrel, 180 gr. bullet, as 2499 f. s., and for the same cartridge with 22 inch barrel, as 2460 f. s. He arrives at this as follows:— $3\frac{1}{2} \times 2\frac{1}{2} \times 2499$, which equals 39, or $19\frac{1}{2}$ f. s. for each inch cut off the barrel. Mr. Landis tells me that Mr. Motley's calculations are very near correct. What is your opinion, and where do you think Mr. Newton gets his $37\frac{1}{2}$ f. s. per inch?

Which style of bullet do you consider most dependable, the Peters protected point, the U. S. C. Co. copper tube, the Western open point, or the short exposed soft point spitzer bullet? Which has the best penetration, and which is the most killing?

Have you tried the 110 and 117 bullets in the .250 Savage, and did you find these superior in killing power to the 100 grain bullet? I am now referring to the article in the November 15 AMERICAN RIFLEMAN, page 16, by Malcolm Dean Miller, M. D. My opinion is that the throat of the .250 is too short for these bullets and would give excessive breach pressure. It is none too long for the 100 gr. bullet.

What would be the proper velocity of the .250 bullet at point of impact to get the best penetration and killing power?

The relationship between velocity and length of barrel is a difficult subject upon which to generalize. So I can speak of only what is

known concerning the relationship between velocity and barrel length.

In the Springfield rifle, using 150 grain bullet and Pyro D. G. powder the change in velocity in barrels between 18 and 30 inches is very close to 25 f. s. per inch.

In the Krag rifle and carbine, using 220 grain bullet and W. A. powder the difference in velocity between a 30-inch and a 22-inch barrel is 80 f. s.

In other calibers, using other weight bullets, and other powders the results will be quite different. With a heavy bullet, for example, the powder will burn quicker, and a long barrel will not add much in velocity. With a light bullet and progressive burning powder a long barrel will add considerably to the velocity. I utterly fail to see how anyone can write a formula to cover all these factors.

With regard to types of expanding bullets. I feel that a bullet to be reliable on game should mushroom well, and yet hold together on impact with flesh and heavy bone. Only thus can we insure the bullet doing good damage and penetrating through to the vital part of the animal at which it is aimed. We must consider velocity in connection with bullet construction. Our inventors have so far failed to produce a practical expanding bullet which will mushroom and yet not fly to pieces at muzzle velocities over 2400 f. s. If the bullet be long, heavy, and have a thick jacket and just a fine point of lead exposed at the front, it will hold together up to M. V. 2400 f. s. The Krag 220 and British 303-215 grain bullets with quite a little lead exposed at the point do well on all game at 2000 f. s., but at much higher velocities they go to pieces too much. The Krag 220 grain bullet had sufficient weight to give good penetration on really large game. The .30-30-170 grain bullet at the same velocity as the Krag, lacked the penetration or momentum to get through the big bones and into the vitals on animals much larger than deer. The modern high velocity expanding bullet gives theatrical kills on broadside shots because it gets through the thin walls of the chest and explodes inside, but it gives too many failures on shoulders and hips of really large game. The 180 grain Springfield bullet (any make expanding) at M. V. 2700 f. s.

does very well on American game because as a rule after it breaks up there are still one or two particles heavy enough to get through into the vitals, but this cartridge often fails miserably on the tougher African game. The point is that a long, heavy bullet with thick jacket and only a fine point of lead exposed at the point, say 175 grains in 7 m. m., or 220 grains in .30 caliber, while it will not give the occasional "theatrical" kills of higher velocity bullets, practically never fails to drive through flesh and bone of all soft-skinned animals the world over, clear into the vitals at which it is aimed, and such a bullet at a muzzle velocity of 2400 f. s. is the most reliable bullet in the world today for soft skinned game. For thick skinned game, which includes only elephant, rhino, hippo, and African Indian buffalo and related species, the full jacketed bullet is the only missile which will give the required penetration.

Now take your .25 caliber rifle. The caliber is too small to carry a bullet of the weight and construction necessary to smash through heavy bone and muscle. An expanding bullet in that size will not expand to a diameter large enough to do the damage desired. It seems to me, therefore, that if a man is going to use such a small bore rifle on big game he will get better results by relying on the explosive feature of a lighter bullet at high velocity, than on the drive through feature of a bullet that holds together, although with the former he must expect failures on shoulder or hip shots on the larger game. In the .250-3000 Savage rifle I would, therefore prefer the 100 grain bullet to those of heavier weight because I think 100 grains is about the heaviest weight that we can speed up to velocity that will surely give the so called explosive effect. I am aware that others have speeded up 117 grain bullets to pretty high velocity, but they have been more or less experts, dealing with selected components and selected areas, and have been very careful in their loading. I should not like to recommend such charges to the man in the bush. Also I think the 100 grain open point bullet is a much better game bullet than the 117 grain bullet because it has a much thicker jacket and much less lead exposed at the point.

In shooting woodchucks with the .250-3000 rifle I have noticed that very frequently the bullet does not come out of the animal. If this happens often on a little soft, light-boned animal like a woodchuck it naturally follows that on thick-skinned and big boned animals we will very frequently have the bullet making a wound only three or four inches deep. If the bullet strikes behind the shoulder and has only the thin chest wall to go through all will probably be well, but otherwise a failure is most apt to result. A painter or artist usually depicts an animal broadside on, but I have noticed that very often the view that one gets of game in the woods is the south end of an animal going north. Several years ago I was shooting woodchucks in Connecticut, using a .25 caliber Mauser rifle, shooting a 100 grain bullet at 2600 f. s., a piece of glorious accuracy. We spied a chuck about 75 yards off in a clover field, and my friend slowed down the motor just enough to let me jump off without alarming the chuck. I sneaked to the fence at the side of the road and got a good rest, centering the cross-hair of the telescope on the chuck's eye. I made a most perfect bullseye, getting the eye exactly, but, although the chuck's head was turned sideways, the bullet did not come out.

On the other hand I have been privileged to see a large number of .256 Mannlicher 150 grain bullets recovered from grizzly bears and other large game. In many cases these recovered and most perfectly mushroomed bullets have smashed the shoulder or hips of grizzlies or other large game, and continuing on, have driven through the whole length of the animal straight in the direction in which they were aimed. But these bullets were of the type known as the Stigand. They had a very thick jacket, and just a pin head of lead was exposed at the point. The muzzle velocity in the old style of .256 Mannlicher rifle made by Jeffery of London was 2350

f. s. My friend has used this rifle exclusively for about 25 years, and has shot with it between 70 and 80 grizzlies, and certainly over 500 head of other game. He is still using it. I think it is the smallest caliber efficient big game rifle. Of course a 7 m. m. or a .30 caliber would, in many instances, undoubtedly have killed quicker, or killed with a single shot where the .256 took two shots, mainly because the area of the mushroomed bullet would be larger.

And yet I believe that the .25 caliber rifle has a most decided sphere of usefulness. In California, or the eastern United States, for example, where the largest game is deer, and where one will usually have occasion to use the weapon mainly on smaller game—woodchucks, ground squirrels, coyotes, rabbits, grouses, hawks, crows, and ducks—the .25 caliber should be an ideal all-around weapon. Fine reduced loads can be worked up for any of them using the 87 grain full jacketed pointed bullet and powder charges of Du Pont No. 75 or 80 powders, or Hercules Unique Powder. The full-charged cartridge with 87 or 100 grain expanding bullet is fine for deer. So the .25 caliber is the ideal weapon for the chronic woods loafer, but is by no means the best weapon for a man who wants to bring back heads of moose, elk, caribou, or goat, or the skins of bear.

At the present time I am preparing a series of articles for the *AMERICAN RIFLEMAN* which will go into the construction and effect of game bullets in great detail and will submit a quantity of interesting evidence to substantiate the views I have expressed herein. These articles will start about February 1st.

LIGHT LOADS

CAN I reload the .38 S. & W. 125 grain bullet with 2 grains of Du Pont Pistol Powder No. 5? And the S. & W. Special 145 grain bullet with 3 grains of same powder?

I have a 10 yard range in my cellar and want to use the lightest load possible for practice on the .38 caliber.

Would this small amount work all right in the shell loose, and would it be necessary to crimp shells at all for use in a revolver. I see Capt. Crossman's new book, *Gun and Rifle Facts* on page 78, that S. & W. are to put out a new .22 caliber pistol, do you know how soon they will? F. M. A., Elgin, Ill.

Answer (by Maj. Hatcher) I have never tried a load as small as two (2) grains of DuPont Pistol Powder, No. 5, with the .38 S. & W. 125-grain bullet. DuPont, No. 5 is a nitro-cellulose powder which requires a certain pressure before it burns properly.

With very light bullets it is sometimes necessary to use a heavier charge of powder to make up for the reduction in pressure caused by lightening the bullet.

The regular recommended load for the 125-grain bullet is three and one-half ($3\frac{1}{2}$) grains of No. 5, ad for the 145-grain bullet, three and eight-tenths (3.8) grains of No. 5.

I do not believe that two (2) grains of No. 5 will work satisfactorily with the 125-grain bullet, but no harm will be done in trying it.

Bull's-eye being a nitro-glycerin powder, does not require so much pressure for proper burning, and can be used in smaller loads than No. 5. With the 125-grain bullet, you may use two (2) grains of Bull's-eye and get satisfactory results.

It is probable that three (3) grains of No. 5 will work satisfactorily with the 145-grain bullet in the .38 S. & W. Special, or you may, if you like, use two and one-half ($2\frac{1}{2}$) grains of Bull's-eye for a very light load.

It is necessary to crimp the bullets in reloading for a revolver, for if the bullets are not crimped, the recoil will make them move forward out of the cartridge cases.

In shooting with very light loads, better uniformity is obtained by being sure that the powder is against the primer.

For this reason, hold the muzzle of the gun up after each shot, so as to let the powder run back against the primer.

LIGHTENING THE SPRINGFIELD

I WANT to get some information and your advice in regard to the restocking of a Springfield I own.

This rifle was made up as a sporter at Springfield Armory. The action is extra fine and the barrel very accurate. My only objection to the arm is that with sling strap it weighs nine pounds, and I found last fall in British Columbia that a gun of this weight is pretty heavy to carry up the mountains after goat.

It is my intention to have this gun restocked and I am anxious to get the weight down to seven pounds if it can be done without making the gun unsafe.

I realize that turning the barrel down will lessen the accuracy at long range and I suppose that shortening the barrel will do likewise, but as it is my understanding that most game shots are under 300 yards, I wanted to get your opinion of just what can be done along this line.

The 30-60 seems to me to be the best all around cartridge and I would much prefer to do all my hunting with one rifle rather than have a different gun for each kind of game.

I have always taken a lot of pride in the firearms I own and I want, and am willing to pay for, the best job of stocking I can get. I can give you barrel dimensions if you need them.

R. N. H., Topeka, Kan.

Answer (by Maj. Whelen). The barrel of the Springfield rifle can be cut off to 20 inches in order to lighten it. Doing this you will sacrifice about 100 ft. per second in muzzle velocity, but you will sacrifice very little, if anything, in accuracy. Below 20 inches, however, both accuracy and muzzle velocity begin to fall off very rapidly. On the other hand, if you start to turn down the barrel of a Springfield rifle to make it thinner, and hence lighter, you begin to lose accuracy very rapidly and of course you can carry this to such a point that the rifle becomes dangerous. I would very strongly caution against not turning the barrel down at all, but rather to shorten it to 20 inches only in your efforts to gain accuracy.

The barrel being shortened to 20 inches, I think with the Springfield, can be restocked in a different manner so that the accuracy will not be injured and so that it will be a satisfactory weapon for miscellaneous work, and the weight brought down to about $7\frac{1}{2}$ pounds, or perhaps an ounce or so less. I do not believe it is possible to get lower than that without making the gun both unsafe and unsatisfactory. This $7\frac{1}{2}$ pounds would include the holing out of the stock and of the forearm.

LIGHT LOADS FOR THE SAVAGE

I HAVE been trying to work out a short range load for use in my Savage .300 lever action rifle. I have been using a cast bullet, Ideal No. 30810, cast from Mattern's formula Antimony 7, Tin 7 and lead 86. Bullet weighs 96 grs. I lubricated and sized it to .311. Sized neck and shell to hold if friction tight and loaded with 7 grs. Duponts No. 80.

I get groups of 3 inches at 50 yds. Can you make any suggestions likely to improve on this, or do you think that is as good as I can get from this combination? Can you suggest anything better for me to use? What would you consider the maximum charge of powder to be safe from leading with this bullet?

A. W. M., Ontario, Can.

Answer (by Maj. Whelen). I should say that the trouble with the load for the .300 Savage cartridge that you have been trying is, first, that the bullet is too short so that it has to jump from the case through the large throat of the chamber quite a distance before it reaches the lands, and, second, that the powder charge is a little bit too small. My own experience has been that we do not get very good results with DuPont No. 80 Powder in cartridge cases as large as a .300 Savage until we use about 10 grains of powder.

While I have not actually tried any reduced loads in the .300 Savage cartridge, from my own

experience with similar rifles, I would suggest that probably you will get the best results from loads approximately as follows:

Use the 150 grain .30 '06 full jacketed pointed Service bullet with 18 grains of DuPont No. 80 Powder. Load the bullet as far out of the case as possible and still be able to work the cartridge through the magazine.

Use the 150 grain bullet, the mould for which is made by the Modern Bond Company, Wilmington, Delaware. Cast the bullet of 1 part of tin and 10 parts of lead, or with Mattern's formula and lubricate and size it .311 inch and use 10 to 12 grains of DuPont No. 80 Powder. The bullet should be seated rather far out of the case so that it will more nearly meet the lands when the cartridge is inserted in the chamber.

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I say "up to" as the limit of corrective twist is probably six inches.

As to "beyond," the barrel vibration already set up by our procedure costs us over 26 per cent of the accuracy given by the same batch of ammunition when fired from a heavier test barrel.

While this loss is probably balanced by flat trajectory we thus retain; good as present accuracy is, we are trying for perfect accuracy.

A well balanced bullet will unquestionably fly better than one needing excessive correction. If less correction is required twist might be cut down below vibration point.

That will restore the 26 per cent of lost accuracy, immediately.

I am giving my main idea only as you are fully qualified to see the minor chances open.

All that is necessary is to devise a conical bullet having its centre of gravity as well located as that of the round one. Strange as it may sound; the conical bullet offers an opportunity to locate it still more advantageously. What do you think about this?

J. L. J., Pittsburgh, Pa.

Answer (by Maj. Whelen). Your letter of November 7 has been forwarded to me from Frankford Arsenal. The meaning of it is not quite clear in my mind, but I have tried to read between the lines, so if what I have to say below is not to the point please write again.

The present form of boat tail bullet for rifles has not been arrived at simply by hit and miss methods, but is the result of very deep scientific investigation. These investigations do not show that there is any advantage to be gained by shifting the center of gravity of the bullet outside the center of form. I tried this shifting the center of gravity by employing hollow bases and aluminum tips of various sizes to the core, and in no case obtained any advantage.

By the term "correction" I presume you refer to the twist of rifling required to spin the bullet. The minimum twist which will correctly stabilize a Palma or National Match bullet will not also stabilize a similar bullet made in large quantity in wartime because of certain small defects in this latter type of bullet. Needless to say, a military rifle must be made to function efficiently with the kind of ammunition we can get in war.

The twist of rifling is not the only factor affecting vibration. Other factors are the resistance (stock and shoulder) applied below the axis of the bore, breech pressure, etc. It is probable that the only reason that a heavy barrel is slightly more accurate than the service barrel is because the breech pressure differs slightly from cartridge to cartridge.

If you can tell me more in detail just what is in your mind, or better still submit a plan, I will be able to discuss this matter more intelligently.

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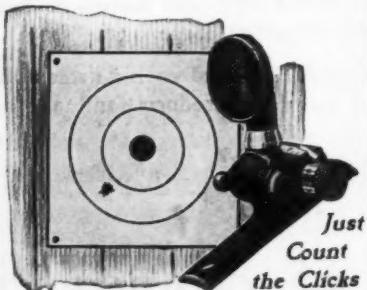
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FOR SALE—Winchester Model 1895 Carbine; 30 U. S. Government Model, 1906 cartridge, Lyman receiver rear sight; fine trigger pull by A. W. Peterson, \$45.00 Perfect condition. S. Morris, care Edgar Veigel, Afton, Wyoming.

WANTED—Colt 1901 or similar revolver using the .38 Long Colt cartridge barrel, four or six inch. Price about \$15.00. O. W. Brown, Box 106, Cambria, Iowa.

FOR SALE AND EXCHANGE—One Police Dog Puppy, female, four months old, for .22 Springfield or B. S. A. new. One Savage .22 Sporter folding leaf and Lyman rear special butt plate. Cost \$32.00. Shot very little. Fine shape, make offer. Herbert R. Maxfield, The Gateway, New Hartford, Connecticut.

FOR SALE—Winchester Model 90, .22 long Lyman, No. 2-A. Ivory bead sight, octagon barrel, perfect condition, inside and out, with carrying case, \$25.00. Bought within a year. Melvin H. Chapin, 235 Gray St., Arlington, Mass.

TO TRADE—One Winchester 5-A Scope without mountings. Never been used. In factory condition. **WANT**—A Colt Automatic .22 target pistol. Barrel must be A-1 condition. D. E. Cook, Brockport, N. Y.

Terms

THE uniformly excellent returns from advertisements appearing in the classified columns of THE AMERICAN RIFLEMAN make it a most satisfactory and productive medium for the disposal of surplus shooting equipment, or the acquisition of special types of firearms.

Free Insertions. Each subscriber is entitled to one insertion of one-half inch, when his subscription is paid up for one year. It is necessary only to write or print the text plainly, noting thereon the date subscription was paid. These advertisements will appear in the first available issue and should be in publication office two weeks prior to the following publication date.

Paid Insertions. Non-subscribers or those who have already made use of the subscriber's privilege may take advantage of these columns at a cost of \$1.00 per inch or part thereof. No advertisement for less than \$1.00 accepted. Advertisements will be set in 6 point solid. They should be in the publication office two weeks prior to the time appearance is desired.

WANTED—Butt Stock and Plate for Stevens Schuetzen rifle, Ballard actions. **FOR SALE** OR TRADE—Stevens-Peterson target rifle .28-30, new. Gun Shop, 231 Bedford St., Johnstown, Pa.

FOR SALE—Ideal Reloading tool for .30 '06 cartridge with muzzle resizing die, new and perfect, \$4.00 postpaid. One new No. 103 Lyman Sight for Stevens rifle, used one week at Camp Perry, \$5.00. **WANTED**—Barrel for Ballard action, .22 L. R. cal., must be first class. G. H. Woodworth, Troy, Pa.

TRADE—Ross Model 10, 303, 30½ inch barrel, serial No. 917, good as new. One Springfield Model 1917, shot 7 times. Would sell or exchange for a good .30 Newton, 5½ m. m. Mannlicher, or a good 6 m. m. U. S. N. John B. Todd, R. F. D. 1, Box 9, Westpoint, Tenn.

FOR SALE—Lever action .250-3000 Savage, oil finished stock, checkered. Shot only 20 times, open and peep sights, \$45.00. Will consider a sporting Springfield in trade. State who did the remodeling. Dr. Thos. J. Pearson, Roswell, New Mexico.

FOR SALE—Colt's Officers' Model Target and 130 cartridges. Gun is new, never shot. Winchester Model 1912 Pump Gun, 12 gauge, in new condition. Stevens Double Hammerless, 12 gauge. **WANT** Ithaca 16 and Reising Pistol. L. O. Andrews, 331 Park St., Plymouth, Wisconsin.

FOR SALE—Kodaks, Graflex cameras, lenses, binoculars at lowest prices, new and slightly used. We take your camera or high grade firearms in trade. National Camera Exchange, 7th and Marquette Sts., Minneapolis, Minnesota.

FOR SALE—New Zeiss Kodak Anastigmat Lens F-6.3 in Illex Acme Shutter, 5 inch for 3½ x 4½, \$12.00. Might Trade Krag Reloading Tools. C. W. Williams, 394 Broadway, Benton Harbor, Michigan.

WANT—.32-20 S. A. Colt, sleeping suit. **SELL OR TRADE**—New .38 S. & W. special, military, target sights. Harold Peterson, Central Ave., East Providence, R. I.

FOR SALE—Savage .22 H. P., Winchester .22, '90 Model, Stevens 25 Ideal, Colt .38 and .45, Weiss Alpine Binocular, Ansco Camera. Holden, 166 North St., Northampton, Mass.

FOR SALE—Stevens No. 44½ 32-40 super accurate 27 inch barrel heavy No. 3 tapped for scope fitted with single set triggers and good peep sights, 3 ply cushion butt plate. \$12.00 Parcel Post C. O. D. O. P. Stoner, Seely Lake, Montreal.

WANTED—7 m. m., 8 m. m. or .30 U. S. '06 Sauer-Mauser Rifle, give description. Box 1617, Pittsburgh, Pa.

FOR SALE—Colt D. A. .38 Spl., 6 inch, round checked walnut grips. Gun like new, action perfect, and not a scratch outside. \$22.50. W. C. Franks, 1401 Majestic Bldg., Detroit, Mich.

FOR SALE—Remington Model 24 Automatic for .22 long-rifle. Practically factory condition throughout. Transportation paid. Price \$22.00 P. O. Money Order. V. A. Lyman, Casmalia, Calif.

SELL.—.250-3000 Savage lever peep sight, gold front about 100 cartridges goes with gun. Excellent condition \$40.00. Krag rifle stock slightly changed to improve appearance, barrel fine, very accurate two boxes cartridges, \$16.00. .22 Stevens Model 10, 8 inch King front and rear sights cost \$4.00, condition first class, good holster, \$14.00 C. A. Counts, Anaconda, Montreal.

FOR SALE—1 Colt .45 U. S. Auto., new never fired, \$18.00. 1 B. S. A. 22 air rifle, 1500 rounds pellets new, \$25.00 cost \$45.00. 1 Krag rifle, good order with 500 rounds good ammunition—and auxiliary chamber for 22 S. & W. pistol cartridge \$10.00. Jerome Clark, care of AMERICAN RIFLEMAN.

FOR SALE—Krag carbine, as issued, fired only three times, price \$15.00. Springfield 30 as issued, used but in gun crank condition, price \$20.00. W. H. Humphrey, Jr. Bluemont, Va.

EXCHANGE—A high grade steam engine indicator outfit; reducing wheel, two cocks, extra piston, two springs planimeter and tools. Want 52 Winchester 22 cal., 22 Springfield 22 cal., or .22 cal. Colt Auto. Wm. Garlinger, New Lexington, R. R. 4, Ohio.

FOR SALE—.38 Colt Sp. officers model 7½ inch; .30 Luger genuine prewar 4 5-8 inch; .38 Colt auto. military with Audley holster; all fine \$24 each; .350 Colt auto. like new \$15. Frank Darnielle, 3124 So. James, Minneapolis, Minn.

FOR SALE—1 .22 S. & W., \$25.00; 1 .38 S. & W., \$30.00; 1 .38 Colt Officers model 7½ inch \$30.00. All are practically perfect and new. V. S. Thayer, Postmaster, Readsboro, Vt.

FOR SALE—Fox Sterlingworth hammerless automatic ejector, 30-inch, right modified, left full choke, guaranteed new condition. Sent privilege examination. Price \$42.00. H. M. Wilson, Maysville, Ky.

WANTED—A .45 Colt automatic. State condition and price. C. G. Harrel, St. George Hotel, 60th & Blackstone, Chicago, Ill.

FOR SALE—Springfield Sporter Lyman No. 48 and gold bead sights, trap butt, sling swivels, etc. Stock 13½ x 2½ inch, \$90.00. 6.5 Mannlicher Schoenauer, 100 cartridges, \$50.00. Both NEW. W. W. Watson, Box 518, Greensboro, N. C.

FOR SALE—1 12-ga. Winchester auto., new \$50.00. 1 12-ga. Winchester, good condition \$2.00. 1 8 m. m. Mauser, double se' triggers \$15.00. 1 .22 Cal. Colt Police, positive, \$15.00. 1 .32 cal. S. & W. revolver, 6-inch barrel, \$25.00. 1 .22 cal. Stevens "Offhand" 6-inch barrel, \$8.00. 1 1906 Winchester, .22 cal., \$15.00. 1 Remington auto., model 24, .22 short, Lyman Sighted, \$23.00. 1 Colt's Officers model, 38 special 7½ inch barrel, new, \$40.00. 1 B-5 Winchester, telescope sight, \$18.00. 1 B. C. Rice telescope sight, 25 inches long, \$5.00. 1 40-330 mould, \$1.25. 1 40-65 mould, \$1.25. 1 45-70-405 mould, \$1.25. 1 32-40 Winchester barrel Oct. \$5.00. 32-20 primed cases, new, \$1.50 per C. 32-20 soft-point bullets, 85c per C. 30-40-220 gr. soft-point bullets, \$2.00 per C. 30-30 primed cases, new, \$2.50 per C. 30-30 full jacketed bullets, 90c per C. H. C. Moore, Box 29, Prairie du Sac, Wisc.

FOR SALE—22-32 S. & W. revolver and \$5.00 Heiser holster for \$15.00. H. A. Timm, 217 Iowa Ave., Muscatine, Iowa.

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